CERTIFICATION

I have reviewed the Annual Monitoring and Evaluation Report for the Bighorn National Forest for fiscal year 2001. I believe that the monitoring and evaluation requirements of the Forest Plan (Chapter IV) have been met and that decisions made in the Forest Plan are still valid. I have noted and considered the recommendations and will implement those that I decide are appropriate after further analysis and required public notification and involvement.

I wish to thank the entire staff on the Bighorn National Forest for completing this Annual Monitoring and Evaluation Report. Our resources were stretched thin with concurrent work on the Forest Plan Revision. Our specialists are serving many roles as they monitor existing activities, implement new projects, and lend support to revision effort. I would also like to thank all our cooperators and volunteers that help us in managing this unique environment – without their help we could not succeed.

/s/ William T. Bass
WILLIAM T. BASS
Forest Supervisor

June 11, 2002
Date

Table of Contents

INTRODUCTION

The Bighorn National Forest Land and Resource Management Plan (Forest Plan) was approved on October 4, l985. The Plan was developed over a five-year period, based on, among other things, a comprehensive public notification and comment process. An Environmental Impact Statement and Record of Decision accompanied the Forest Plan.

The Plan established direction and process so that all future decisions would include an interdisciplinary approach to achieve integrated resource management. The Forest Plan provides direction to coordinate multiple-uses on the Bighorn National Forest on a sustained basis. The plan also fulfills legislative requirements and addresses local, regional, and national issues. The Forest Plan, Chapter IV requires monitoring and evaluation of management activities to determine:

1) How well Forest Plan objectives have been met*;*
2) Consistency of activities with Standards and Guidelines contained in the Forest Plan; and
3) The need for amendment or revision*.*

This report is the annual Monitoring and Evaluation Report for the 1985 Forest Plan, as amended. It displays the results of monitoring and provides the Forest Supervisor and public with information on the progress being made toward achieving the goals, objectives, and management requirements in the Forest Plan. It also provides information regarding how well we are fulfilling public demand for goods and services while protecting the Forest resources. An annual Monitoring and Evaluation Report is to be prepared for each existing Forest Plan, including those plans under revision. Funds are provided for the preparation of the report based on information and data collected under agency direction.

BACKGROUND

Monitoring is the quality control aspect of forest planning; therefore, it requires data collection and observations of activities to provide a basis for periodic evaluation of the planning process and the Forest Plan. Evaluation is the analysis and interpretation of monitoring results. It addresses the goals, objectives, long-term relationships, management direction, and significant management activities occurring. There are four aspects to monitoring and evaluation; they include:

Implementation Monitoring

Forest personnel conduct monitoring as part of their routine assignments and management responsibilities. Their results are documented in project files. Monitoring is performed to determine if management activities are designed and carried out in compliance with Forest Plan direction and management requirements.

Effectiveness Monitoring

Effectiveness monitoring determines if management activities are effective in driving the Forest toward the desired future condition described for the various management areas.

Validation Monitoring

Validation monitoring determines whether the initial data, assumptions, and coefficients used in development of the Forest Plan were correct, or if there is a better way to meet goals and objectives and achieve the desired future condition.

Evaluation and Conclusions

The purpose of evaluation is to interpret monitoring results and reach some conclusions as to what the monitoring results really mean with regard to implementation of the Forest Plan. The interdisciplinary team (ID Team) may make recommendations and identify research needs as a result of the evaluation process.

FIVE -YEAR MONITORING REQUIREMENTS

Every five years monitoring is to be evaluated to determine if the Forest Plan needs to be revised. Revision may occur if any of the following criteria occur:

1) Changes in public demand;
2) Changes in condition of the land or resource used to conduct the analysis, catastrophic events, or monitoring results; and
3) National Forest Management Act requirement to update every 15 years.

The Bighorn National Forest is currently in the process of revising its 1985 Forest Plan. Information on these activities can be found at our local web site under "Management Planning" (http://www.fs.fed.us/r2/bighorn/).

PLANNING ACTIVITIES

Forest Plan Revision

The Forest Plan Revision began in earnest in 2001. Two main goals were established:

- Involve the public and affected governments in the revision process, and
- Determine what adjustments will be needed to the existing plan.

Public Involvement

Different techniques were used to facilitate public participation in the revision process. A series of newsletters (now called the "Revision Reporter") provided information on upcoming events, explained changes in regulations that could affect future recommendations, introduced the Revision Team, recapped public comments/concerns, and provided interesting data on changing Forest conditions.

Public meetings were held in late 2000 and early 2001 in the communities of Worland, Sheridan, Buffalo, Gillette, Lovell, and Greybull, Wyoming. Approximately 300 people attended. The most frequently recurring issues focused on continued multiple use management, access to the Forest, and sustainability of the resource. People were also asked to help design the public involvement process by indicating what communication

methods were most effective. Public meetings, newspaper, and newsletters were mentioned most often.
To solicit views, opinions, and suggested improvements to recreation and travel management issues, work group meetings were conducted in Buffalo, Sheridan, and Greybull throughout the winter. Participants had the opportunity to share and learn about the importance of different recreation uses and travel patterns.

The Forest conducted two field trips during the July/August period. The goal was to give people the opportunity to interact and exchange ideas, learn, and stimulate ongoing dialogue about managing the Big Horns. Buses transported participants to a variety of locations, highlighting a wide range of land management issues.

To gain more participation and expertise, the State of Wyoming became a "cooperating agency" for Plan revision. The State will provide additional social, economic, and wildlife resources for the planning effort. Dr. Audie Blevins and Dr. Katherine Jensen of the University of Wyoming mailed social assessment surveys to a random sample of residents in Big Horn, Johnson, Sheridan, and Washakie Counties. They also conducted personal interviews with leaders in the surrounding communities. Likewise, Dr. Tex Taylor and Dr. Roger Coupal of the University of Wyoming are providing economic information about the local economies. The economic study is being funded in part by the Big Horn Mountain Country Coalition, through a USDA rural development grant.

At the same time, Governor Jim Geringer announced that the State would share its "cooperating agency" status with Big Horn, Johnson, Sheridan, and Washakie County Commissions and the 6 Conservation Districts in the four-county area. Other state agencies will also provide assistance. And while the State is providing cooperative assistance and technical expertise, the Forest Supervisor remains the final decision maker in all aspects of the revision.

To make documents more readily available to all interested citizens, including those not residing near the Forest, we maintain a web site with copies of all related information (*See* Five-Year Monitoring Requirements).

Revision Issues/Changes
Revision of the Forest Plan is based on a "need for change". The "need for change" approach identifies and analyzes those aspects of the 1985 Plan where problems exist. Using comments received from the original Notice of Intent published in the Federal Register in 1999, a review of extensive monitoring over 13 years, past inventories/assessments, changes in regulations, and comments received during the recent scoping period, **6 major revision topics** (subject areas) will be addressed in the revision process.

- Biological Diversity: The term "biological diversity" refers to the full variety of life in an area, including the ecosystems, plant and animal communities, species and genes, and the interaction of individuals with their environment. The more varied the environment, the more diverse it is. Biological diversity is a complex issue, with no agreement on the how it should be measured or perpetuated. Public

interest in this subject has grown substantially since approval of the 1985 Plan. In addition, the Plan's emphasis on heterogeneous habitats and exclusion of natural disturbance events raises concerns about sustainability of Forest ecosystems.

- Timber Suitability and Management of Forested Lands: The amount of land classified as suitable and available for timber harvest is being re-assessed because of regulatory requirements, the high level of public interest, and concerns over the ability to meet timber outputs while maintaining current Standards and Guidelines.
- Roadless Areas and Wilderness Recommendations: An inventory and evaluation of roadless areas for consideration as potential wilderness is a requirement of the forest planning process. Management of inventoried roadless areas continues to be controversial.
- Special Areas: The Bighorn National Forest includes several unique areas or resources of physical, biological, or social interest. Collectively these are referred to as "special areas". Regulations direct the Forest Service, at the time of revision, to make recommendations for Research Natural Areas (areas maintained as representative samples of an ecological community) and potential National Wild and Scenic Rivers. We will consider other areas for their cultural/heritage values.
- Recreation and Travel Management: Issues and management concerns related to travel management have increased substantially since the 1985 Plan. User conflicts and resource impacts are on the rise. Since the last planning period, technology has introduced new recreational activities. Simply stated, more people are using the mountains in a variety of ways.
- Allowable Sale Quantity (ASQ): As early as 1987, Forest Plan monitoring indicated the ASQ and prescribed Forest Plan Standards and Guidelines were incompatible. The Forest Supervisor determined this incompatibility was significant and it would be necessary to amend the Plan. The Forest published a "Notice of Intent" in the Federal Register, signifying the start of the amendment process, on December 31, 1990.

  The Notice of Availability for the Draft Supplemental Environmental Impact Statement (DSEIS) was published in the Federal Register on May 15, 1992. Over 500 copies of the Draft were distributed to interested parties. The Forest conducted public forums with over 270 people attending and a total of 2,061 individual comments were analyzed during a 90-day comment period. As expected, there was no clear consensus on the issue of ASQ.

  In the fall of 1994, the Final Supplemental Environmental Impact Statement (FSEIS) was finished and a preferred alternative proposed. Before release of the FSEIS and "Record of Decision", the ASQ decision was deferred until the Forest Plan Revision. Uncertainty of appropriation (funds) delayed an earnest start on revision of the Plan (and ASQ) until 2001.

The Forest Revision Team will be spending the upcoming year (2002) developing alternatives that address these issues and analyzing effects of potential implementation. We hope to have a Draft Environmental Impact Statement published in the summer of 2003.

Forest Plan Amendments

The 1985 Forest Plan has been amended 14 times since it was approved in 1985. The amendments are summarized below and the changes in management area allocations resulting from the amendments are displayed on the attached table.

*Forest Plan Amendment One updated the Ten-Year Timber Sale Summary (Appendix A)--updated through 1990, Arterial and Collector Road Construction and Reconstruction Summary (Appendix B)--updated through 1993, Trail Construction and Reconstruction Summary (Appendix C)--updated through 1993 and Developed Recreation Site Construction/Reconstruction Summary (Appendix H)--updated through 1993.

*Forest Plan Amendment Two updated the implementation schedules, including the Ten Year Timber Sale Summary in Appendix A, Trail Construction And Reconstruction Summary in Appendix C, and Developed Recreation Site Construction and Reconstruction Summary in Appendix H. It was necessary to update these schedules annually to reflect changes in planned activities due to such factors as differences between program budgets and actual appropriations, economic considerations, site-specific analysis, and other natural and physical factors.

*Forest Plan Amendment Three updated the Ten Year Timber Sale Summary in Appendix A. Schedules are updated as needed to reflect changes in planned activities due to differences between budgets, actual appropriations, economic considerations, site-specific analysis, and other natural and physical factors. The changes in the schedules did not represent a change in management direction.

Forest Plan Amendment Four changed and improved some of the monitoring requirements for wildlife, range, soils, water, riparian, and fish habitat. The Forest Interdisciplinary Team had discovered that some of the procedures and standards did not provide the best means for monitoring.

Forest Plan Amendment Five was issued to change the projected expenditures and returns shown in Forest Plan Table III-1. This change updated the costs for plan implementation.

Forest Plan Amendment Six added the Forest's Recreation Strategy as Appendix J and the designation of three scenic byways as Appendix K. These documents did not change the overall Forest Plan direction, but did clarify the goals and objectives of the recreation program.

*(The Ten-year Timber Sale Summary was later determined to be an administrative decision, and therefore, did not need to be formalized with a Plan amendment.)

Forest Plan Amendment Seven replaced the seven-year regeneration standard with a five-year regeneration standard, which applied to final harvest of lodgepole pine. The amendment added additional Standards and Guidelines to be used in making a determination that regeneration could be assured within five years following final harvest. The amendment also made corrections to the lands designated as suited for timber harvest, reducing the amount of land suited for timber harvest by about 4,000 acres to 262,062 acres.

Forest Plan Amendment Eight changed the visual quality objectives for the Twin Lakes Reservoir special-use permit area, Sections 34 and 35, Township 54 North, Range 87 West, Sixth Principle Meridian. The visual quality objectives in management areas 4B and 9A were changed from Retention and Partial Retention to Maximum Modification. This change allowed for the expansion of the Twin Lakes Reservoir to proceed and be consistent with Forest Plan direction.

Forest Plan Amendment Nine changed management prescriptions on 83 acres of lands because of the Tie Hack Dam and Reservoir, which is located on the South Fork of Clear Creek. This amendment changes 47 acres of management prescription 4B (wildlife management) and 36 acres of management prescription 7E (timber management) to 83 acres of management prescription 9E (water impoundment).

Forest Plan Amendment Ten changed 22 acres of 6B (livestock grazing) to 1A (Developed Recreation Management – Meadowlark Lake Resort Expansion). In addition, the timber suitability on these 22 acres of Management Area 1A changed from suited forestland - timber emphasis (511 timber component) to unsuited forestland - land not appropriate for timber production (825 timber component).

Forest Plan Amendment Eleven changed the management prescriptions on 101 acres of National Forest lands located at the Twin Lakes Dam and Reservoir site located on Coney Creek, Tongue Ranger District. This amendment changes 86 acres of management prescription 4B (wildlife management) and 15 acres of management prescription 9A (riparian management) to 101 acres of management prescription 9E (water impoundment).

Forest Plan Amendment Twelve changed the Standards and Guidelines in the Area of Consultation described in the Medicine Mountain Historic Preservation Plan. The current Forest Plan land allocations within the Area of Consultation will remain the same.

Forest Plan Amendment Thirteen changed 40 acres from 7E and 2B designation to 1A to accommodate the Tie Hack Campground.

Forest Plan Amendment Fourteen changed the Cloud Peak Wilderness Area from four management areas to two, and revised or added 10 Standards and Guidelines for management.

These fourteen amendments redistributed the management area allocations for 206 acres, which is .019 percent of the total Bighorn Forest.

New Amendments

On March 24, 2000, the U.S. Fish and Wildlife Service designated the Canada lynx (*Lynx canadensis*) as a Threatened species under the Endangered Species Act. The lynx occurs in coniferous forests that have cold, snowy winters and provide a prey base of snowshoe hares. Most of the remaining lynx habitat in the United States is on federal lands, and the Fish and Wildlife Service has determined that current land management plans contain inadequate guidelines regarding the conservation of lynx habitat. Subsequently, in September 2001, the Bighorn National Forest in conjunction with 18 other National Forests and 4 Bureau of Land Management units in the northern Rocky Mountains, began the task of adding new habitat Standards and Guidelines to existing land management plans for the protection of the Canada lynx. Amendment Fifteen should be completed in 2002, and in the interim period, activities affecting lynx habitat are addressed in each project level analysis.

MANAGEMENT AREA SUMMARY TABLE

This table displays the current Management Area allocations on the Bighorn National Forest.

MANAGEMENT AREA	EMPHASIS	ACRES ALLOCATED IN 1985 FOREST PLAN	CURRENT ALLOCATED ACRES
1-A*	**Existing & Proposed Developed Recreation Facilities**	**913**	**935**
1-B	**Existing & Potential Winter Sports Sites**	**559**	**559**
2-A	**Semi-Primitive Motorized Recreation Opportunities**	**42,378**	**42,378**
2-B	**Rural & Roaded Natural Recreation Opportunities**	**15,220**	**15,220**
3-A	**Semi-Primitive Nonmotorized Recreation Opportunities**	**44,660**	**44,660**
3-B	**Primitive Recreation in Unroaded Areas**	**45,980**	**45,980**
4-B*	**Wildlife Habitat Management for One or More Management Indicator Species**	**206,237**	**206,104**
4-D	**Aspen Stand Management**	**11,171**	**11,171**
5-A	**Wildlife Winter Range in Non-forested Areas**	**15,500**	**15,500**
5-B	**Wildlife Winter Range in Forested Areas**	**10,153**	**10,153**
6-A	**Livestock Grazing, Improve Forage Condition**	**26,494**	**26,494**
6-B	**Livestock Grazing, Maintain Forage Condition**	**242,541**	**242,541**
7-E*	**Wood Fiber Production**	**202,500**	**202,442**
8-A #(1.11)	**Pristine Wilderness Opportunities**	**122,224**	**135,029**
8-B	**Primitive Wilderness Opportunities**	**45,352**	**0**
8-C #(1.13)	**Semi-primitive Wilderness Opportunities**	**27,493**	**54,010**
8-D	**Transition Wilderness Opportunities**	**424**	**0**

MANAGE MENT AREA	EMPHASIS	ACRES ALLOCATED IN 1985 FOREST PLAN	CURRENT ALLOCATED ACRES
9-A*	**Riparian and Aquatic Ecosystem Management**	**11,744**	**11,729**
9-B	**Increase Water Yield**	**4,080**	**4,080**
9-E*	**Needed Water Impoundment Sites**	**0**	**184**
10-A	**Research Natural Areas**	**1 ,320**	**1,320**
10-C	**Scenic, Geologic, Historic, and Other Special Interest Areas**	**165**	**165**
10-D	**Wild and Scenic Rivers Corridors**	**30,559**	**30,559**
	TOTAL FOREST ACRES	**1,107,670**	**1,107,670**
#	***1998 Forest Plan Amendment for Revision of Wilderness Standards and Guidelines changed Management Areas and acres allocated***		

(*NOTE: Management Area 1A (Recreation Facilities) increased by 22 acres, Management Area 4B (Wildlife), decreased by 133 acres, Management Area 7E (Wood Fiber Production) decreased by 58 acres, Management Area 9A (Riparian) decreased by 15 acres, and Management Area 9E (Water Impoundment) increased by 184 acres.)

2001 MONITORING FIELD TRIP

Traditionally, the Forest conducts a monitoring field trip each year to review specific projects and make recommendations for Plan and/or project improvements. This year the Leadership Team, members of the Forest Interdisciplinary Team and timber industry representatives reviewed operations on the Schuler Timber Sale. Objectives included:

1) Brief the Leadership Team on the sale's history;
2) Discuss mitigation measures employed during sale layout and operation; and
3) Discuss any needed changes to improve project design as identified in the environmental assessment, and resulting consistency of on-the-ground implementation.

Cody Lumber received the contract to log the Schuler Timber Sale in January of 1997.

The review indicated several areas of success and needed improvements:

- Road design protected the banks and reduced sedimentation. Stream protection was successful with installation of a silt fence (Unit 14).
- Road closure (gate) prevented unnecessary resource damage during hunting season when ground conditions were wet.
- Due to limited access to the area, the prescription in Unit 18 was changed from dozer piling/burning to broadcast burning.

- Unit 15 was successfully broadcast burned, but a narrow "neck" was difficult to manage from a fire perspective. Future timber sales should be designed to avoid these situations.

In summary, technology and harvest methods have changed in the past 10 years since the Decision Notice on this sale was signed (September 1991). Nevertheless, Cody Lumber and the Forest Service have coordinated operations throughout this period, making improvements where needed.

TABLE OF PROJECTED AND ACTUAL OUTPUTS

The following table displays projected Forest Plan average annual outputs, costs, and returns to actual Fiscal Year 2001 accomplishments. A direct comparison of projected outputs is not always appropriate due to variables such as allocated budgets.

Activity	Unit of Measure	2001-2010 Avg. Annual Projected Outputs	FY 2001 Outputs
SOILS			
Soil and Water Resource Improvements (i.e., improved watershed condition)	Acres	38.5	150
Annual Soil Survey	Acres	Not Estimated	Completed
Soil Loss (incremental increase due to timber harvest and road construction)	M tons	8.4	Not Evaluated
WATER			
Water Yield	MAF	699	699
Water Meeting Water Quality Goals	MAF	Not Estimated	~
Water Not Meeting Water Quality Goals	MAF	Not Estimated	~
MINERALS			
Leasing Availability Recommendations			
-No Lease	M Acres	211.98	0
-Lease	M Acres	723.84	0
-Lease Without Surface	MAcres	171.85	0
Minerals Operating Plans	Total Number	1	1
FIRE			
Fire Management -Most Efficient Level	Million $'s	1.16	1.70
Fuels Breaks and Natural Fuels	Acres	300	2,082
WILDLIFE AND FISH			
Wildlife Habitat Improvement	Acres	2440	1,327
Big Game Winter Range Carrying Capacity			
- Elk	Number	527	See page 36
- Deer	Number	1,053	See page 36
Riparian Area Improvement	Acres Improved	200	640

Activity	Unit of Measure	2001-2010 Avg. Annual Projected Outputs	FY 2001 Outputs
	Annually		
Aspen Treatment	Acres	85	85
Changes in Habitat Capability of Indicator Sp			
- Early Successional Stage	% change (mean of 8 Species)	Not Estimated	~
- Mid Successional State	% change (mean of 8 species)	Not Estimated	~
- Late Successional Stage	% change (mean of 6 species	Not Estimated	~
Fisheries Improvement Structures	Structures Constructed Annually	60	0
Wildlife Structures	Structures Constructed Annually	15	0
Threatened and/or Endangered Species Habitat Management	Number of Animals	0	1 (Lynx)
RANGE			
Permitted Livestock Grazing	MAUMs	144	90 est.
Areas of Grazing, Recreation & Wildlife Conflicts Where Conflict are Reduced	M Acres (Cumulative totals rather than annual outputs)	24	64
TIMBER			
Total Programmed Sale Volume Offered	Million BF	16.5	1.91
Total Programmed Sale Volume Offered	Million CF	4.2	0.38
Sawtimber Volume (7'+)	Million BF	14.5	0.03
Sawtimber Volume (7"+)	Million CF	3.8	0.07
Roundwood Volume Offered (live 5"- 6.5")	Million BF	0.6	0.13
Roundwood Volume Offered (live 5" - 6.5")	Million CF	0.10	0.03
Mortality Volume	Million BF	1.4	1.75
Mortality Volume	Million CF	0.37	0.28
Timber Stand Improvement	Acres	400	534
Reforestation (planting and seeding	Acres	300	248
Clearcutting	Acres	1,194	50
Shelterwood Cutting	Acres	696	470
Uneven-aged Selection Cutting	Acres	89	0

Activity	Unit of Measure	2001-2010 Avg. Annual Projected Outputs	FY 2001 Outputs
Catastrophic Salvage	Acres	0	0
INSECTS AND DISEASE			
Insect and Disease Survey	M Acres	800	800
DEVELOPED RECREATION			
Developed Recreation Capacity (except downhill skiing)	MRVDs	1,156	1,109
Developed Recreation Use (including visitor information services, not including downhill skiing	MRVDs	885	666.0
Subcategories of Developed Recreation			
Developed Recreation Capacity, public sector	MRVDs	611	614.0
Developed Recreation Use, public sector	MRVDs	590	403.3
Developed Recreation Capacity, private Sector (except downhill Skiing)	MRVDs	545	495.0
Developed Recreation Use, private Sector (except downhill Skiing)	MRVDs	295	262.7
DOWNHILL SKIING			
Downhill Skiing Capacity	MRVDs	25	25.0
Downhill Ski Use	MRVDs	21	8.6
DISPERSED RECREATION			
Total Dispersed Recreation Capacity (not including wilderness	MRVDs	2,215	2,174
Total Dispersed Recreation Use (not including Wilderness	MRVDs	1,279	907.0
Dispersed Recreation Capacity by Recreation Opportunity Spectrum Setting			
Primitive & Semi Primitive Nonmotorized Setting (outside of wilderness)	MRVDs	236	215
Semi-Primitive Motorized Setting	MRVDs	342	311
Roaded Natural and Rural Setting	MRVDs	1,573	1,648
Dispersed Recreation Use by Recreation Opportunity Spectrum Setting			
Primitive & Semi Primitive Nonmotorized Setting (outside of wilderness)	MRVDs	162	54.4
Semi-Primitive Motorized Setting	MRVDs	342	217.7
Roaded Natural and Rural Setting	MRVDs	775	634.9
Number of Trailheads with Access for all Classes of Vehicles (incremental over previous period	Total number (1978-1998)	Not Estimated	~
Trail Construction/reconstruction	Miles	2.9	15.0
WILDERNESS			

Activity	Unit of Measure	2001-2010 Avg. Annual Projected Outputs	FY 2001 Outputs
Wilderness Management	Acres	189,000	189,000
Wilderness Capacity	MRVDs	127	127
Wilderness Use	MRVDs	127	70.0
LANDS			
Land Purchase and Acquisition	Acres	Not Estimated	~
Land Exchange Offers	Acres	Not Estimated	~
Right-of-Way Acquisitions	Total Cases Each Period	Not Estimated	~
Occupancy Trespass	Cases	4	5
Landline Location	Miles	38	7
FACILITIES			
Road Construction			
- Arterials	Miles	0	0
- Local Roads	Miles	13	0
Road Reconstruction			
- Arterials	Miles	2.5	0
- Local Roads	Miles	6	5.7
HUMAN AND COMMUNITY DEVELOPMENT			
Human Resource program (includes all programs except YCC and Job Corp	Enrollee years	12	10.2
Job Corp	Enrollee years	0	0
EXPENDITURES			
Operation and Maintenance	Million Dollars	5.91	7.32
Capital Investment	Million Dollars	2.14	0.67
General Administration	Million Dollars	1.15	1.58
Long Range Fixed Costs	Million Dollars	0.70	0.45
Total Budget	Million Dollars	9.90	10.02
RETURNS TO TREASURY			
Returns to Treasury	Million Dollars	2.28	.91

ACHIEVING OBJECTIVES OF THE FOREST PLAN

A review of the Table of Projected and Actual Outputs will indicate variability in accomplishments. Outputs often vary substantially from year to year as funding levels change. The trends in various resource areas over a three-to five-year period are a better reflection of whether or not the Forest Service is progressing toward accomplishment of its goals and objectives to reach the desired future condition. A more detailed discussion is contained in the narratives for individual resource areas.

The single factor that has the most influence on outputs and program effectiveness is the **annual budget.** The distribution of our funds reflects national direction and priorities of the administration and Congress. Dollars are often not adequately distributed to meet the needs for individual program areas.

For the past several years we have been using a system of project budgeting, often referred to as a "unified budget". Employees plan this budget and execute projects on a Forest-wide basis. We have made an effort to cap our fixed costs (permanent employees' salaries, vehicles, rent and utilities, etc.,) at 70 percent of the annual budget. The remaining 30 percent is to be used to provide flexibility to fund a seasonal workforce, provide training, purchase equipment, and deal with unplanned events.

MONITORING RESULTS

AIR QUALITY

INTRODUCTION

This report describes the various monitoring and target accomplishments completed by the Bighorn National Forest aquatics group. The Forest aquatics program encompasses the individual soil, air, water, fish, and minerals programs.

PROGRAM SUMMARY

The 189,000-acre Cloud Peak Wilderness is a Class II air shed that is subject to protection under the Clean Air Act. Lakes in the Cloud Peak are considered the most sensitive lakes that are currently monitored in the Rocky Mountain Region because of their low acid neutralizing capability. The wilderness has beautiful views and outstanding scenery that could be impacted by air pollution, especially particulates that can quickly reduce visibility with little additional particulate material. Threats to the local air quality exist from local sources such as coal bed methane development in the Powder River basin, and the proposed gas-fired electric generating plants to power the coal bed methane activity.

MONITORING REQUIREMENT:

Air Quality

The Forest has permitted a contractor of the State of Wyoming to operate an automated air quality monitoring station on Hunter Mesa west of Buffalo, Wyoming. This station has replaced the original visibility camera.

A visibility camera was installed on Grouse Mountain early in the summer of 1995. The purpose of the camera was to monitor the long-term air resource of the Cloud Peak Wilderness. Two photographs were taken daily of Mather Peaks. These photographs were analyzed to determine whether or not there has been an increase in particulate matter over time. The Forest terminated operation of its visibility-monitoring camera in the fall of 2001, as agreed to by the Rocky Mountain regional office air quality specialist.

The Forest continues to conduct lake sampling to monitor for acid precipitation deposition in two lakes within the Cloud Peak Wilderness. Lake monitoring has been conducted since 1992. No water quality degradation has been found to date.

MONITORING REQUIREMENT:
Meet Air Quality Standards for Prescribed Burning

Compliance with Federal and State air quality standards is adhered to during prescribed fire projects. Prior to the burn event, the Forest Supervisor approves a prescribed fire plan, and a request for burn permit is filed with the Wyoming Department of Environmental Quality – Air Quality office. The request for permit is accompanied by burn data that includes the number of acres to be burned, type of fuels, and a SASEM report, which predicts the amount of particulate matter to be produced and models smoke drift under various weather conditions. Upon approval of the permit, a weather forecast is obtained the day prior to, or the day of the actual burn for predicted smoke/fire behavior and weather conditions. Monitoring of wind direction and smoke dispersal is performed during the prescribed burn to ensure compliance with air quality regulations.

SOIL AND WATER

PROGRAM SUMMARY

Water quality across the Forest ranges from severely degraded to pristine, with the overall water quality generally considered to be good. The most common cause for degradation of water quality is chronic sediment delivery from roads, stream crossings, and channel scour.

The condition of riparian areas across the Forest ranges from severely degraded to fully functional. The riparian areas most at risk are those located in meadows and grasslands. Timbered riparian areas are generally in good condition and are adequately protected when Best Management Practices (BMPs) are properly applied, however, non-timbered riparian areas are subject to excessive grazing pressure by livestock and wildlife. Changes are being made during allotment management plan revisions in the type of grazing system, season of use, riding plans, exclosures, and livestock numbers. These livestock management changes are reducing the level of impact on riparian ecosystems.

Other impacts to water quality and riparian health come from recreation, off-road travel, and roads. Timber sale BMP reviews show that when Best Management Practices are properly applied there is no detectable change in water quality or riparian health.

MONITORING REQUIREMENT:
Ground Disturbing Activities That Have the Potential to Alter Soil Productivity /Water Quality

FY01 TARGET - Soil and Water Resource Improvement

Measurement Unit	FY 01 Target	FY 01 Accomplishment
Acres	150	150

The Soil and Water Resource Improvement target includes acres treated with improvement measures to increase the quality and quantity of water, and maintain or improve soil productivity in accordance with land management plans.

In FY01, the Forest accomplished its soil and water resource improvement targets with the following projects:

- Initiated a contract and began construction that will replace or install 14 stream crossings in the North and South Tongue watersheds.
- Decommissioned road in the Caribou Timber Sale.
- Constructed exclosure along Tongue River within experimental pastures.
- Extended existing Bull Creek exclosure.
- Improved road along Little Horn meadows.
- Improved existing Fool Creek exclosures.

An example of a poor stream crossing in the South Tongue watershed.

FISHERIES

Program Summary

Managing for native and non-native game fish is a priority on the Forest. Currently, the Bighorn has one sub-species of native cutthroat trout (Yellowstone cutthroat) that is a Rocky Mountain Region Sensitive Species. The aquatics group has been working cooperatively with the Wyoming Game and Fish Department to monitor and inventory fish populations across the Forest. To date, the Forest has helped fund and support four graduate students to inventory and monitor Yellowstone cutthroat populations, as well as water quality and riparian conditions on the Bighorn National Forest. Once the populations are found, habitat improvement and recovery efforts will soon follow.

MONITORING REQUIREMENT:
Fish/Riparian Habitat Rating

FY01 TARGET - Riverine Stream Reach or Channel Unit Scale Inventory

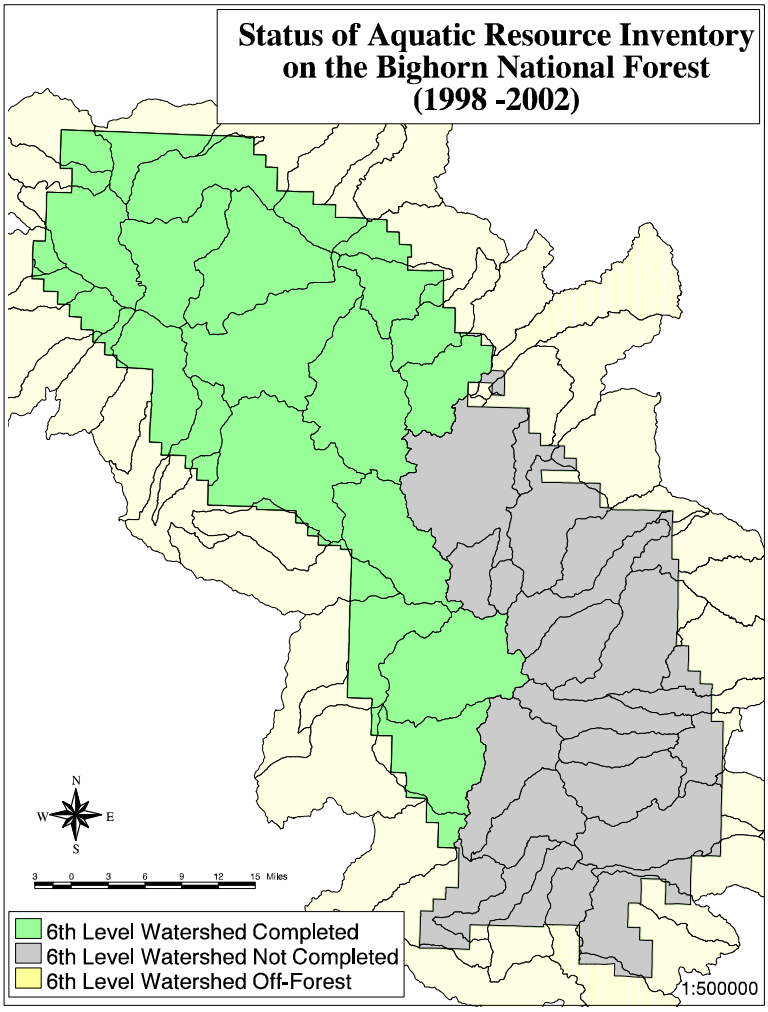
Measurement Unit	FY 01 Target	FY 01 Accomplishment
Miles	20	150

This item relates to the number of stream miles for which maps and/or descriptions have been accomplished during the past year. During FY01, the aquatics team, in conjunction with the University of Wyoming, inventoried and/or described hydrologic and aquatic conditions on over 150 miles of stream channel across the Forest. The accomplished miles are so much higher than the projected target as a result of improved GIS capabilities, and a sampling design that allows us to extrapolate conditions based on stream type.

Reach level aquatic inventories were conducted as part of large-scale watershed analyses for range allotment revisions. The inventories were done using stratified sampling of stream reaches classified during the 1998 Integrated Resource Inventory (IRI). Once the distribution of stream types was known from IRI maps, the crew sampled reaches that were known to be in reference or impacted condition. The inventories were conducted using the R1/R4 Fish Habitat Inventory Protocol. Information was then extrapolated across the watershed based on stream type and condition class.

The following watersheds were inventoried during FY01:

- Middle Paintrock Creek
- South Paintrock Creek
- North Paintrock Creek
- Trapper Creek
- Medicine Lodge Creek



The watersheds inventoried for aquatic conditions from FY98 through FY01 comprise approximately 627,000 acres or 57% of the Bighorn National Forest.

FY01 TARGET - Stream Aquatic Biota Inventory

Measurement Unit	FY 01 Target	FY 01 Accomplishment
Miles	20	20

This target refers to the creation of a formally documented, stream-related data gathering/collection process that addresses issues and decisions associated with land management actions. The inventory provides an assessment of the distribution and condition of aquatic resources, and is integrated into the planning, analysis, and execution of projects and activities on the Forest, such as roads analysis, forest planning, and NEPA.

This information was collected as part of large-scale watershed analyses. Data on the abundance and distribution of aquatic plants and fish was collected using snorkeling and electrofishing techniques.

- Paintrock Allotment Management Plan – water, soils, and aquatics analysis in the Dry Medicine Lodge, North, Middle And South Paintrock Creek Watersheds

FY01 TARGET - Landscape/Watershed Scale Assessments

Measurement Unit	FY 01 Target	FY 01 Accomplishment
Assessments	1	1

Assessments are characterizations of ecosystems above the project level that provide information relevant to land management decisions.

- Porcupine Watershed Analysis – water, soils, and aquatics analysis of the Porcupine Watershed

MONITORING REQUIREMENT:
Fish Population Trends

During FY99 and FY00, the Forest co-sponsored inventories of populations of Yellowstone cutthroat trout. These inventories were conducted by graduate students with the intent of filling in data gaps identified by the Wyoming Game and Fish Department. The Forest has a Powerpoint slide show of the work done to date on the Yellowstone cutthroat trout. The following watersheds have been inventoried over the last two years:

- Little Bighorn
- South Fork Paintrock Creek
- Cedar Creek
- North and South Beaver Creek
- Deer Creek
- Trout Creek

FY01 TARGET - Inland Fish Lakes Restored/Protected

Measurement Unit	FY 01 Target	FY 01 Accomplishment
Acres	6	6

This measure reports the surface acres of inland fish bearing lakes, ponds, and reservoirs that were enhanced using structural or non-structural improvements. These restoration/enhancement activities address features limiting the productive capability of a body of water, for the express purpose of improving fish habitat.

In FY00, Casey's Pond in the Shell Creek watershed was enlarged and deepened in order to facilitate over-winter survival of catchable trout. This project was done in cooperation with Wyoming Game and Fish and the Natural Resource Conservation Service.

In FY02, dredging will be completed in Sibley Lake to address sediment accumulations along the shoreline. This work began in FY01.

FY01 TARGET - Inland Fish Streams Restored or Enhanced

Measurement Unit	FY 01 Target	FY 01 Accomplishment
Miles	19	19

This measure reports the miles of inland fish bearing rivers and streams that were restored or enhanced using structural or non-structural improvements. The restoration/enhancement activities address features limiting the productive capability of a body of water, for the express purpose of improving fish habitat.

In FY01, streams were protected with construction and maintenance of riparian exclosures, along with implementing changes in riparian grazing strategies. These activities were conducted across the Forest as part of allotment management plan revisions.

MINERALS

MONITORING REQUIREMENT:
Compliance With Terms of Operating Plans and Consistency with Plan

FY01 TARGET - Non-Bonded Non-Energy Operations Processed

Measurement Unit	FY 01 Target	FY 01 Accomplishment
Operations	1	1

This report contains the number of operations processed that did not require a reclamation bond, such as Plans of Operations for which bond requirements were waived, Notices of Intent, or free-use mineral material permits for the public. Accomplishment is reported when an operation plan is processed to a decision. There is a decision document signed by a line officer in the file that verifies each operation reported as processed.

The Powder River Ranger District received one Notice of Intent and two Plans of Operations for non-bonded mining operations under 1872 Mining Law. The District Ranger approved one Notice of Intent and one Plan of Operation. The second Plan of Operation is being reviewed by the Regional Geologist to determine the validity of the claim and the appropriateness of the proposed structures at the site.

The Powder River Ranger District sold 11,950 cubic yards of earth fill and 46.75 tons of common stone and lichen rock. Free use permits were issued for 650 cubic yards of earth fill. The District also received 7 inquiries regarding hand-panning, dredging, and other small scale mining activities.

Effectiveness Monitoring

Forest Plan Standards and Guidelines are addressed during project planning, however, during project implementation they may not always be reviewed due to time and personnel limitations. Project monitoring where Standards and Guidelines and Best Management Practices have been implemented demonstrates that Forest Plan direction will protect the soil and water resources.

During the summer of 2000, the State of Wyoming conducted a review of Best Management Practice (BMP) implementation and effectiveness across the state. One of the randomly selected timber sales was Caribou. The audit found that streamside management zones were effective in preventing water quality impacts as well as maintaining channel stability. The audit team published their findings in a report titled, "*Wyoming Forestry Best Management Practices, Forest Stewardship Guidelines for Water Quality. 2000/2001 Field Audit Report*". This report is available through the Wyoming Timber Industry Association.

Validation Monitoring

The difference between natural erosion and erosion resulting from management activities needs to be defined. In addition, a concerted effort needs to be made to ensure that Standards and Guidelines are being met at the project level.

FIRE

PROGRAM SUMMARY

Staffing of permanent, semi-permanent, and seasonal fire positions was increased to meet 100% of the established Most Efficient Level (MEL). This guideline enabled us to fill three permanent full-time positions, four semi-permanent (18/8) positions, ten semi-permanent (13/13) positions, two trainee (Assistant Fire Management Officer) positions, and 32 temporary (summer) positions. The increase in funding reflects the change in resources coverage levels, which were updated to provide fire suppression coverage seven days a week over the entire wildfire season.

Effective radio communication is an ongoing issue, but improvements were made and are continuing. Radio communications are sometimes poor because of inadequate coverage and equipment limitations. Equipment that was previously installed at the Cody Dispatch Center (CDC) is still unreliable, but it appears that the problem may be related to the phone line connections. CDC was able to dispatch units on the Forest.

Repeater maintenance at Dome Peak and Black Mountain was conducted during the 2001 field season. The Burgess Fire crew assisted with transportation and installation of equipment at the Dome Peak Radio Repeater. The crew also helped transport items needed at Black Mountain Lookout for installation and maintenance of the future repeater site. A helicopter ferried equipment and building supplies to and from the site and was used as a training opportunity to maintain qualifications (helicopter crew members) of the fire crew.

Upgrades and maintenance of all of the weather stations occurred during fiscal year 2001. There are currently five weather stations on the Forest, and all can be accessed via Internet to obtain current and historical weather observations. The stations at Leigh Creek and School House Park were upgraded to the FTS system. Fire crews removed the old equipment and installed new equipment to monitor all phases of the weather. The weather stations at Burgess and Boyd Ridge received routine maintenance. The task included installing new equipment and components. The weather station at Mill Creek is scheduled for an equipment upgrade during the 2002 field season. When this task is complete, all five weather stations will operate under the new FTS system, which will greatly reduce long-term maintenance costs to the Forest.

When not engaged in fire suppression, fire crews assisted other resource areas with project work throughout the Forest.

Resource Projects Supported by Fire Crews

Activity	Location(s)	Purpose
Exclosure Construction/Maintenance	- Bull Creek - Fool Creek - Hunter Mesa Spring	Protect sensitive riparian areas
Thinning – meadow encroachment	- Along Highway 14	Removal of conifers to maintain meadow
Thinning – KV	- Twin Nickel Timber Sale - Garland Gulch Timber Sale	Removal of diseased or defective trees/improve stand health and vigor
Thinning – aspen stands	- Cull Watt Park Road #366 - Rapid Creek - Twin Nickel Timber Sale	Removal of conifers in aspen to alleviate crowding and promote health and vigor of aspen
Thinning – fuels reduction & safety	- Billy Creek - Big Goose Road	Minimize fire hazard; improve driver safety
Facilities Maintenance	- Big Goose Ranger Station - Burgess Ranger Station - Various locations on Forest	Upgrade/Maintain/ Improve Facilities
Road and Riparian Area Repair	- Tongue Ranger District (2000 Mud Bog Case)	Site prep and grass seeding for erosion control to repair/recover area damaged by vehicles
Tree cutting and removal	- Duck Pond Road (Twin Lakes Project)	Improve water quality

MONITORING REQUIREMENT:
Fire Control Objective

Fire occurrence in 2001 represented an average year. Fire restrictions were put into effect in mid-August until significant precipitation had been received in late September. There were 15 fires that burned approximately 26 acres during the fiscal year. The 2001 fire danger was moderate to high early in the fire season, and lack of precipitation from early June until mid-September kept the heavy fuels very dry (down to 7% moisture level). The fire danger ranged from very high to extreme from July to September, and several of the indices used to determine fire danger ratings were equal to or more extreme than those recorded at the same time period last year. The Forest and surrounding area was tinder dry, but the Bighorns managed to elude having a large fire event.

Several members of the East Zone fire crews were utilized to help fill out the Interregional Hotshot Crew. We sent people with some experience, but also maintained our response capabilities and leadership coverage for this Forest. By the end of the season, eight people from the East Zone had been given an opportunity to travel with the IR Crew on at least one assignment.

The East Zone also provided personnel to fill out the Fort Washakie Helitack Crew. Four people were given the opportunity for detailed assignments.

Fire Reports – FY 2001 Wildfires

Name	Date of Ignition	Size
Child's	05/03/01	1 acre
Story 1	05/27/01	.10 acre
Wolf	06/24/01	.30 acre
Hospital Hill	07/02/01	1.30 acre
Walker	07/04/01	5 acre(13 acre NonFS)
Hunt Mountain	07/15/01	.10 acre
Child's Creek	07/15/01	.10 acre
Shell Reservoir	07/24/01	.30 acre
Dayton Gulch	08/06/01	3 acres
Soldier Park	08/07/01	.30 acre
Johnson Creek	08/11/01	.50 acre
Bucking Mule Falls	08/12/01	.10 acre
Cub Creek	08/16/01	.10 acre
Bear Mountain	08/20/01	.30 acre
The Party	08/25/01	.10 acre

MONITORING REQUIREMENT:
Fuel Treatment of Activity Fuels

There were 400 acres treated with prescribed burning and piling for fiscal year 2001. Treatment projects included prescribed broadcast burning, hand piling of fuels, reducing fuels at Ranger Stations and campgrounds, and burning of piles throughout the Forest to reduce the backlog of hand and machine piles.

The Big Goose hand crew assisted in a cleanup project to reduce slash loading and improve visual quality at the Dome Rock post and pole area. After the commercial timber sale had closed, an area was opened to the public for post, pole and tepee pole cutting. This activity led to an unacceptable amount of slash and tree stumps that did not meet visual quality objectives for the area. The Big Goose fire crew spent several weeks in this area cutting stumps to less than 6" and piling slash for later burning. A total of 15 person-days were spent on this project and salaries were charged to KV funds. A total of 54 piles were built and later burned in October.

Fuels reduction at Big Goose Ranger Station - A 3-acre area south of the cabins and west of the boneyard was worked on this year to reduce fuel loadings around the Ranger Station. Dead trees were removed and slash piles were constructed by hand to be burned later in the fall. A total of 15 person-days were spent on this project.

Hazard tree removal around bunkhouse and various places (Hunter) -This is an ongoing project to remove hazard trees in campgrounds and along various roads from Hunter Work Center to Powder River Pass. Trees were felled where needed in campgrounds, and slash was piled away from roads. A total of 5 acres was treated and charged to the fuels account.

Logging slash at Billy Creek - After the Billy Creek research project had been completed, the Fire Management Officers determined that fuel loadings were too heavy, so the fire crews piled the slash for burning later in the fall (burning accomplished in FY 2002). By combining crews from Big Goose, Tyrell, and Hunter, a total of 36 piles were built in one day. Treatment area was 5 acres.

Fuels reduction project at Burgess Ranger Station - The quality of the Burgess Ranger Station firebreak was improved by thinning the adjacent timber stands. This project needs to be done on a yearly basis due to the new growth and mortality of the lodgepole stands. Dead trees, ladder fuels, and thinning in denser areas were the main focus of removal here, as well as in stands adjacent to the burn project. About 7 acres were treated.

Hazard tree removal at Little Goose, East Fork, and Ranger Creek Campgrounds, Swamp Creek Hill, and Little Goose Falls - The Big Goose crew dropped hazard trees in conjunction with their normal fire patrols. A total of 15 person-days were used, and salaries were charged to fire production (PR).

Both the Dead Swede Campground and the Burgess Dump Station were targeted this year for hazard tree removal. The dead trees were bucked up and stacked for firewood use by campers. Approximately 13 acres were treated and charged to fire production (PR).

Burn preparation at Pete's Hole - This project included a lot of saw work in steep terrain. The objective was to cut a 30 ft. wide fuel break in thick canopy to prepare for a prescribed burn. The Porcupine and Shell hand crew performed much of the labor, with the East Zone personnel assisting with the pre-burn fuel treatment only.

Effectiveness Monitoring

Forest Plan direction for fire management is very general. The Standards and Guidelines provide limited direction for fire management, while the Fire Management Action Plan has been written to provide specific fire management direction for suppression in the various management areas. Preliminary data and mapping projects continue to be prepared for the Forest Plan revision.

The National Fire Management Analysis System (NFMAS) and the Fire Management Plan provide the necessary direction to fund the organization and implement direction to meet the Forest Plan Standards.

WILDLIFE

PROGRAM SUMMARY

The wildlife program on the Bighorn National Forest consists of analysis, management, and treatments to improve habitat for many species including Management Indicator Species (MIS), Threatened and Endangered Species (TES), and Forest Service Sensitive Species (TES). The Forest coordinates with the Sheridan and Cody Regions of the Wyoming Game and Fish Department (WYGF) in managing wildlife populations. Two Forest zone biologists (east and west) are responsible for the majority of program operations, while a Forest-level biologist, added to the staff in FY 2001, assists in program management and Forest Plan revision. Personnel conduct inventory and monitoring of habitats and specific MIS/TES species, provide support to other resource projects through inventory and environmental analysis, and present public education programs on wildlife conservation. Current emphasis is placed on the enhancement of aspen and riparian habitats through treatments such as exclosure construction and maintenance, prescribed burning, and mechanical regeneration.

Threatened, Endangered and Sensitive Species

The Bighorn continued the second year of a three-year Canada lynx (*Lynx canadensis*) survey, following the National Lynx Detection Protocol. Our survey grid is Number 63 out of 66 surveys currently being conducted nationwide. This survey requires three consecutive years of data collection, and will be continued in FY 2002. To date, no lynx have been found on the Bighorn National Forest based on FY 2000 results. A total of 64,000 acres of potential lynx habitat were surveyed, requiring approximately 45 person-days to complete, including preparation time and coordination (35 days in the field).

Following the 2000 field season, 6 hair samples were collected and sent to a lab in Missoula, Montana for analysis. The results were 2 coyotes, 1 mountain lion, 1 bobcat, 1 bear, and 1 sample could not be tested (the DNA would not amplify). Following the 2001 field season, 16 hair samples were collected and sent to the lab in Missoula. Results from those samples have not been received yet.

Six bat houses were monitored this year on the east side of the Forest. The plan was to monitor all houses at least twice each month; once during daylight hours and once after dark. Houses were only checked twice during the summer and only during daylight hours. The one at the Sheridan Work Center contained two unknown species of Myotis (*Myotis spp.)*. The bat house at Big Goose Ranger Station contained one Little Brown Myotis (*Myotis lucifugus*); this is consistent with the results from 1998 and 1999. The bat house at Hunter Ranger Station contained one Townsend's big-eared bat (*Plecotus townsendii* - a Sensitive Species) during 1998, but was not occupied during 2001. The other three bat houses were also not used this year.

No osprey sightings were recorded in FY 2001, and no surveys were conducted to attempt to locate an active nest. Past sightings in the vicinity of Park Reservoir raise the question of whether an active osprey nest may be in the area.

Surveys for boreal owls were not conducted on the Forest during the spring nesting season due to lack of available expertise.

No active goshawk nests were observed during the 2001 nesting season.

From 1997 through August 2001, surveys for water voles (*Microtus richardsoni*) have been conducted by Dr. Marion Klaus of Sheridan College on the Bighorn National Forest in conjunction with district biologists. No surveys were conducted on the east side of the Forest in 2001. On the west side, two locations were sampled during the 2001 field season (Porcupine Creek and unnamed tributary) with no voles found. Dr. Klaus will be completing her publication on water voles in FY 2002 based on the findings from these trapping and research efforts. Surveys on the east side in 2002 will focus on the North Tongue Grazing AMP Environmental Assessment. Surveys detect presence of water voles in areas that appear to contain suitable habitat, but where presence has not been documented before.

Surveys were conducted for amphibians in the Pole Creek and Johnson Creek areas of the Powder River Ranger District. Also, an anecdotal report of presence of Northern Leopard frogs at Meadowlark Lake was investigated. When surveyed during the 2001 field season, it was documented that this site does contain a breeding population of Northern Leopard frogs (*Rana pipiens*). Surveys were also conducted on 10 acres of riparian and wetland habitats on the Medicine Wheel/Paintrock District. Wood frogs (*Rana sylvatica*) were found at Buckley Creek in the Paintrock Allotment Management Plan (AMP) area. Other surveys in the Porcupine Creek area for Devil's Canyon AMP revealed no amphibians. All survey information was sent to the University of Wyoming for

incorporation into the Wyoming Natural Diversity Database. Surveys are scheduled to continue in 2002.

The Forest assisted Jason Irwin of McGill University (Canada) with collection of wood frogs for DNA analysis. Ten wood frogs were collected from the East and West Forks of Big Goose Creek. The purpose of Jason's research is to determine if isolated populations are genetically connected to each other, or if they have become isolated into distinct populations.

Two toad domes, set out last season at Sheridan Work Center to provide breeding habitat, were monitored. Three additional domes were set out in Shutts Flat. To date, no amphibians have used the domes.

Sightings of TES and other significant wildlife species recorded on the Forest were reported to the Wyoming Observation System, maintained by Wyoming Game and Fish Department, and to the Wyoming Natural Diversity Database, which is maintained by the University of Wyoming. These sightings are considered to be sensitive information and are not available to the general public. The recordings are mentioned here only to show that the Forest is tracking and recording all verified TES sightings.

No determination has been made on the cave nominations for "significant" caves (4) on the Tongue District. These were submitted in FY 2000 and contacts with the Regional Office and National Cave Coordinator were made to complete the nomination process. The next step will be to prepare cave resource management plans.

Wildlife Support

Support was provided for the following environmental analyses:

- Sourdough Timber Sale
- Story Prescribed Burn Project
- Little Horn Prescribed Burn Project
- Battle Park Travel Management
- North Tongue Grazing Allotment Management Plan

MONITORING REQUIREMENT:
Management Indicator Species (MIS)

Biological Evaluations and Specialist Reports were completed for the Little Horn Prescribed Burn, Battle Park Travel Management EA, and we are in the process of completing Devil's Canyon Allotment Management Plan revision. HABCAP models and analysis, and field reviews of habitat conditions took place on these projects for MIS.

In addition to the above project level analyses, the Forest also conducted a literature review of the MIS identified in the 1985 Forest Plan as requested by the Region. This review occupied substantial time from the biologists, and resulted in the identification of 6 of the original 24 species to be recommended for Forest-level monitoring and for consideration in project level analyses. The 6 species recommended were elk, red squirrel, three-toed woodpecker, red-breasted nuthatch, white-crowned sparrow, and the lark sparrow.

Big Game Species
Mule deer, elk, moose, and bighorn sheep populations are managed and monitored by Wyoming Game and Fish Department. Year 2000 Herd Unit reports (WYGF) were used to acquire the following information.

Elk
Elk are common and are known to inhabit the Bighorn NF during the spring through fall seasons, and may be seen at lower elevations of the Forest during mild winters. WYGF manages populations through three big game herd units. These are the North Bighorn, Medicine Lodge, and the South Bighorn Herd Units (a minimal amount of the South Bighorn occurs on the Forest). Several hunt areas are identified within each herd unit. Population levels are largely managed by hunting, but are also limited by the amount and quality of winter range available and the severity of the winters.

The population objective for the North Bighorn Herd Unit is 4,100 elk (post-season), with current post-harvest population data showing 4,835 animals for 2000. Post-season trend counts for the hunt areas in this herd unit indicate that herds exceed desired levels on the east side of Bighorn NF, and are just below desired levels on the west slope. Harvest strategies have been adjusted to reduce elk numbers in some areas.

The population objective for the Medicine Lodge Herd Unit is for 3,000 animals, with current post-harvest population data showing 3,400 animals for 2000. Harvest strategies are to reduce the population to objective (3,000).

South Bighorn Herd Unit (Hunt Area 34 covers SE portion of Bighorn NF) objective is for 2,900 elk. Drastically over objective, the post-season trend is 4,796 elk for 2000. The population objective for the portion of HA34 that is on the Forest is for 900 elk. The post-season trend is at 1,453. Throughout much of the South Bighorn Herd Unit, harvest is strongly influenced by access to private lands. Harvest strategies for Hunt Area 34 will continue with increased quotas, cow/calf seasons, and longer seasons to attempt to reduce the herd to objective.

No specific habitat monitoring for elk takes place on the Forest. Habitat requirements are assessed with each project analysis. Winter range off the Forest is monitored occasionally by the Game and Fish to assess habitat conditions.

Mule Deer
This species is common and resident to the Forest, and population levels are managed intensively by the WYGF. There are three separate big game herd units, including the North Bighorn, Paintrock, and a minimal amount of the Southwest Bighorn unit that occurs on the Forest. Several hunt areas are identified within each herd unit. Population levels are largely managed by hunting, but are also limited by the amount of winter range available and the severity of the winters. The 2000-2001 winter was another mild winter and populations should continue to flourish.

The majority of the Forest falls within the North Bighorn Herd Unit, followed by the Paintrock. The population objective for the North Bighorn unit is for 25,000 animals, with current post-harvest population data showing 20,300 animals for 2000. Harvest units 50, 53, 25, and 28 represent the majority of the Forest habitat.

The population objective for the Paintrock Herd Unit is for 13,000 deer, with current post-harvest population data showing 13,500 animals for 2000. Harvest units 46 and 48 represent the majority of the Forest habitat, and populations are not well assessed on these two units due to winter range migration.

The population objective for the Southwest Bighorn Herd Unit is 28,000 mule deer. The 2000 post-harvest population estimate is 24% below the objective. Hunt area 43 represents the portion of this herd unit that covers Bighorn NF lands. Mule deer numbers in this hunt area and some others appear to be stable, even though it is well below objective. Management strategies will allow increases in hunt area 43 as well as others in this herd unit.

No specific habitat monitoring for deer occurs on the Forest. Winter range off the Forest is monitored occasionally by the WYGF to assess habitat conditions.

Moose

Population levels are largely managed by hunting, but are also limited by the amount of winter range available and the severity of the winters. The 2000-2001 winter was another mild winter and populations have continued to flourish, despite mortality associated with traffic and illegal harvest.

This species is resident and common to the Forest though non-native, and population levels are managed by the WYGF in one big game herd unit, known as the Bighorn unit. Four hunt areas are identified within the herd unit, including 1, 34, 42, and 43. The herd unit is largely comprised of habitat on the Forest, and has a population objective of 500 animals. The 2000 post-harvest population was estimated at 325-425 moose. Through coordination with WYGF on season and quota setting, the Forest expressed concern on the impact of moose populations to willow communities. Though estimates on moose populations are difficult to obtain, it is estimated that the populations are now nearing the objectives for each of the hunt areas and herd unit. Increased hunting opportunities will be likely for the next several years to try and maintain and/or reduce moose populations. This species is highly desirable for hunting and wildlife viewing.

During FY 2001, monitoring of browse on willow and aspen was conducted to partition use between wild ungulate browse and livestock browse, particularly in the Tongue AMP area.

Bighorn Sheep

From 1992-1994, 111 bighorn sheep were transplanted to Shell Canyon by the WYGF in numerous attempts to establish a population. All attempts have been considered

unsuccessful, as only a small population of approximately 12-20 sheep persist in the Shell Canyon area. No hunting season exists for this species on the Bighorn National Forest.

MONITORING REQUIREMENT:
Peregrine Falcon Occupancy

No peregrine nesting activity was observed on the east slope of the Bighorns during the 2001 field season. The eyrie (nest site) in Goose Creek is on the Forest, however, the volunteer assigned to conduct the monitoring did not accomplish the task.

Since release efforts in 1993 on the west slope of Bighorn National Forest, active eyries have been documented in areas of Shell Canyon and Tensleep Canyon. The Wyoming Game and Fish Department monitors peregrine falcon nest sites statewide. However, the Bighorn National Forest is not surveyed every year. In FY 2001, a Bighorn Forest employee participated in monitoring with WYGF in Shell and Tensleep Canyons. One fledged peregrine falcon was found in Tensleep Canyon, however, no active eyries were located in either Tensleep or Shell Canyons.

MONITORING REQUIREMENT:
Wildlife Habitat Diversity

In addition to the support to projects previously mentioned, the following activities also occurred in FY 2001.

Aspen
Previously established transects and photo points are used to monitor and partition use of aspen between domestic livestock and wildlife. Exclosures are constructed and maintained to encourage regeneration following treatments and to provide monitoring opportunities.

Field inspections or photo points were taken at the following aspen stands during the 2001 field season on the west side of the Forest: Upper Medicine Lodge Canyon on the Forks Allotment, the aspen stand in the Lower Pasture in the Granite Allotment, and the two stands in the Lower Shell Pasture of the Shell Creek Allotment.

During the 2001 field season, exclosures around aspen stands on the west side at Shell Creek, Ruble Creek, Shell Canyon, Woodchuck Bench, and Toe of Cement were inspected, vegetation condition was documented, and maintenance was performed where necessary. These exclosures encompass approximately 43 acres.

All aspen exclosures on the east side were maintained during 2001. The individual exclosures are listed below and total approximately 51 acres.

N. Tongue - 2 exclosures, 4 acres; Marcum Creek - 1 exclosure, 5 acres; P.K. - 3 exclosures, 10 acres; Sheeley cabin - 1 exclosure, 3 acres; Hay Creek - 5 exclosures, 20 acres; Dry Fork - 2 exclosures, 4 acres; Camp Creek - 1 exclosure, 1 acre; Billy Creek - 1 exclosure, 1 acre; Billy Creek II –1 exclosure, 3 acres; #2 Aspen – 1 exclosure, 0.1 acre.

In addition to the above, a new exclosure was built in Hay Creek, on the Tongue District. This exclosure is a replacement of the same fence that was removed 3 years ago. It was previously thought that the aspen saplings (6' to 8' tall) had grown enough to be out of the reach of cattle and big game animals. As this was not the case, the fence was reestablished. During the 3 years that the exclosure was down, the aspen sprouts have been utilized 100% and stem density has dropped from an estimated 1 tree/square yard to only 3 living trees within the 2 acre exclosure. If fencing alone is not sufficient to allow the aspen to restock the site, prescribed burning may be used to remove shade from competing vegetation and to promote suckering (sprouting) of aspen from the live roots remaining inside the exclosure.

Additional aspen exclosures were improved in the Billy Creek area of the Powder River District. A Categorical Exclusion, Decision Memo, and Burn Plan for the two aspen exclosures were completed. Implementation of the burn was completed in October of 2001 (FY 2002). The project covers 3.25 acres, and is designed to induce suckering of aspen in an area that was previously treated with poor results.

Willow/Riparian

Previously established transects and photo points are used to monitor and partition use of willow between domestic livestock and wildlife.

During the 2001 field, seasonal inspection and maintenance was performed on 12 exclosures (approximately 455 acres) as necessary on the west side of the Forest. Condition of willow/riparian vegetation within the 12 exclosures was also documented. Monitoring of the west side included: 1) The transects at Sheep Creek #1 and #2 were set, read, and reset during 2001 field season; 2) The Buckley Creek willow transect (inside the exclosure) was set, but due to lack of time the transect was not read or reset later in the season; 3) A willow photo point and line intercept transect was monitored on Dry Fork Medicine Lodge Creek, with a slight increase in willow height; and 4) Ocular estimate of browse use on willow was conducted in Willow Swamp. It was noted that heavy browsing on willow (by wild ungulates) occurred prior to cattle entering the allotment. Ongoing intensive monitoring of willow-riparian utilization by wild ungulates and domestic livestock was conducted on various allotments on the west slope. Stubble height was also measured in conjunction with willow transects. This data can be found in the Range section of this document.

On the east side, monitoring of willows in the Big Goose area was conducted in FY 2001. This monitoring project was started in 1976, and photos have been taken every 5 years at permanent photo points. Concerns over moose impacts in these livestock exclosures have been identified.

All of the riparian exclosures on the east side of the Bighorns were maintained this season. These exclosures protect approximately 1,003 acres of riparian habitat and a total of 6 miles of fisheries streams.

The affected streams were**:**

Lick Creek - 3 exclosures, 30 acres, 1 mile of stream.
Fool Creek - 2 exclosures, 30 acres, 2 miles of stream.
Sucker Creek - 1 exclosure, 20 acres, 0.5 mile of stream.
Ranger Creek - 1 exclosure, 50acres, 0.5 mile of stream
East Fork - 1 exclosure, 600 acres, 1 mile of stream
Preacher Rock - 1 exclosure, 250 acres, 0.7 mile of stream
Bull Creek - 1 exclosure, 3 acres, 0.2 mile of stream.
Little Willow -1 exclosure, 15 acres, 0.1 mile of stream.
Hunter Creek Pasture - 1 exclosure, 1/4 acre.
South Hospital Hill – 1 exclosure, 1/4 acre.
Hunter Mesa Riparian - 1 exclosure, 1/4 acre.
Hunter Mesa Cow - 1 exclosure, 1/2 acre.
Hunter Mesa Wildlife - 1 exclosure, 1/2 acre.
New Hondo Creek – 1 exclosure, 1/4 acre.
Grommund Creek – 1 exclosure, 3/4 acre, 300' of stream.
Dry Poison Creek – 1 exclosure, 2.5 acres, 1000' of stream.
#3 east - 1 riparian exclosure, 16' x 16'.
#4 Hansen's Spring - 1 riparian exclosure, 16' x 16'.
#1 Hansen's Sawmill - 1 riparian exclosure, 16' x 16'.

Some of the preceding exclosures are designed to exclude big game animals, and some exclude cattle only. Monitoring has shown that annual maintenance is more cost effective than allowing the exclosures to deteriorate and then invest more work to bring them up to standard. Also, it has been shown that even one year's worth of browsing inside an exclosure can set the vegetation back far enough that it takes several years of protection to recover.

The exclosure fences on Lick Creek (east side) were modified to eliminate gaps at stream crossings in fiscal year 1998. One of the newly constructed sites had to be modified further in fiscal year 2000, to exclude cattle from a side gully and to reduce long-term fence maintenance due to snow damage. The modifications made to this exclosure have proven to be effective, and the reconstruction project also reduced long-term maintenance costs. Another goal for 2001 was to transplant willows and reset cages within the exclosure, but this work was not done due to budget and time constraints.

Willows were not transplanted into empty cages inside the Fool Creek exclosure again during FY 2001 due to lack of time. The lower riparian exclosure on Fool Creek was rebuilt in 1999. The upper exclosure was rebuilt in FY 2001. This project was funded by fisheries, much of the layout of materials was accomplished using seasonal workers in wildlife and fire, and the actual construction was accomplished by volunteers from the local Trout Unlimited chapter.

There is a need to maintain/supplement the willow plantings on Bull Creek at the upper exclosure. More cages could be added if funding allows, but this project was not funded for FY 2001.

Willows were planted in Shutts Flat (South Tongue watershed) in 1998. No monitoring was conducted in FY 2001 due to lack of time, as this was not a priority.

In FY 2001, the exclosure at Bull Creek was rebuilt and expanded. The exclosure was reconstructed to a buck and pole type fence (lower maintenance) using volunteer help from Trout Unlimited. The fire and wildlife crews assisted packing the materials into this roadless area. The Forest Service mule string was also used to pack fence materials to the site.

Routine monitoring and maintenance of fish structures, typically provided by the wildlife crew, was not done during FY 2001. Specifically, the in-stream structures in Fool Creek, Bull Creek, Lake Creek, and Lick Creek (about 300 structures total) were not checked or maintained due to lack of funding at the District level.

Wildfire/Prescribed Burning and Monitoring

The success of seeding and rehabilitation work was not monitored in the Stockwell Fire. In 1996, rehabilitation work was accomplished on the Stumpy Ridge Road and some seeding was done near the Little Goose Peak Mine. The mine area was not checked during 2001, and the status of rehabilitation efforts is unknown at this time. Also, monitoring for success of reseeding and other rehab work was not conducted at the Marcum Creek rehab site, the Copper Creek crossing, and the Shutts Flat road, due to a loss of labor force to wildfires.

Monitoring of prescribed burns did not take place during FY 2001 due to lack of available personnel. The specific burns to be monitored included Kerns, Tongue Canyon, and Dry Fork/Skull Ridge. This situation should be rectified in the 2002 season, as the number of fire personnel has increased substantially, and this type of monitoring has been placed on their work list for next summer.

Prescribed burn projects that benefited wildlife are listed under the Fire section of this report.

Other Habitat Projects

Evergreen trees were transplanted in October of 2000 (FY 2001). A total of 29 trees were planted in Prune Creek Campground, and at the bowl quarry on October 24, 2000. Another 21 trees were planted in Tie Flume Campground on October 30, 2000. The work was accomplished using funds (KV) that were collected primarily from the sale of forest products such as Christmas trees and transplants. A total of 50 seedlings were transplanted, and this project is planned to continue for many years until visual screening has been restored and wildlife habitat opportunity has been maximized. Monitoring of the previous three years' work indicates over 99% survival rate, and this project is expected to be a success story – finally!

Snags were marked with signs to protect them for cavity-dependant wildlife species within the Caribou Timber Sale during FY 2001. This work was funded with receipts

collected from the timber sale contractor (KV). Following the 2000 field season, approximately 325 acres of the sale area remained to be signed, and this goal was accomplished during the 2001 field season.

Two other FY 2000 KV projects were postponed due to personnel being sent to fight wildfires. A target of 15 acres of aspen retention and a target of 20 acres of meadow encroachment work were rolled over to FY 2001. Fortunately, we had an excellent crew, and the targets for both years were fully met. Areas treated for aspen retention were primarily along Big Goose Road at Rapid Creek on the Tongue District, within the Twin Nickel Timber Sale on the Tongue District, and along FDR #366 near French Creek on the Powder River District.

Areas treated for conifer encroachment into meadows were primarily at Penrose Park, and along Highway 14 at Cutler Creek.

A total of 120 bluebird houses on the Tongue District were monitored this year with the help of volunteers Bob Tippie and John Kraft, from the Sheridan Chapter of the Audubon Society. Nesting success was below average, and seemed to be related to climatic conditions. Also, the results from the 2000 nesting study were tabulated. Results were sent to all volunteers. Many of the boxes have been exposed to weather for up to 10 years now, and most have deteriorated to the point that repairs are not feasible. We will need to look for opportunities to have new boxes built and begin to replace boxes as needed. A few students at the Sheridan Junior High School have shown an interest in building bluebird boxes as a class project, and then donating the finished boxes to the Forest Service to be used as replacements. This strategy should enable us to maintain our present number of boxes with very little cost to the taxpayer.

An addition was made to the swallow condos at Burgess Ranger Station. Prior to this year, one tier was removed at the Burgess pond site and the middle tier was reset to allow more space between the remaining 3 tiers. The cliff swallows continued to use only the bottom tier, but this year we salvaged the mud from abandoned nests in the bottom tier, and smeared it on the structure it to “bait” the upper two tiers. Cliff swallows have now begun to use all 3 tiers of the main structure. Also, a second condo was erected this spring. This condo supports only 1 tier, and was accepted immediately by the swallows. The condo by the Burgess washhouse has never been used by cliff swallows. We have plans next year to use the “mud bait” technique on this structure as well. During FY 2001, we also made an effort to make the cabins at Burgess inhospitable to swallows and encourage them to use the condos instead. We installed plastic netting over the cabins in areas where swallows have historically built nests. This has proven to be the most effective means of preventing the swallows from building nests on the sides of our historic cabins.

An additional 40 Christmas trees were placed on brush piles that were started last year in the Sheridan Work Center horse pasture. There are now 8 brush piles and 3 hawk perches. The brush piles were placed for small mammal habitat and to discourage prairie dog use of the site.

Inspection and maintenance of 3 upland exclosures (approximately 5 acres upland habitat) was conducted during the 2001 field season on the west side of the Forest. Vegetative condition and composition within exclosures was also documented.

MONITORING REQUIREMENT:
Winter Range Carrying Capacity

The Wyoming Game and Fish Department conducts classification surveys and population trend counts on winter range, which includes some Bighorn National Forest land. Data from these surveys (2000 herd unit reports) indicates a slight population increase in mule deer in the Paintrock Herd Unit, with slightly decreased numbers in the North Bighorn Herd Unit. Elk cow:calf ratios appear to be increasing slightly in the North Bighorn Herd Unit and the Medicine Lodge Herd Unit. The South Bighorn Herd Unit appears to be stable in the cow:calf ratios compared with the 5-year averages.

RARE PLANTS

PROGRAM SUMMARY

A two-person crew inventoried approximately 12,000 acres. Inventory areas were selected by reviewing known element occurrences for habitat, soils, elevations, aspects, etc. New plant locations were confirmed by specimen collection, which was authenticated by Wyoming Natural Diversity Database (WYNDD) personnel.

Arnica lonchophylla was the sensitive species prioritized for search. Thirteen new locations for *A. lonchophylla* were found on the Bighorn National Forest this field season. All of the new occurrences were in the granite, talus, boulder field habitat. It is considered likely, based on 2001 experience, that many more populations of this species occur in like habitats on the Bighorn.

In addition, five new *Agoseris lackshewitzii* populations, and one new *Aster mollis* population, were recorded on the Forest.

2001 was the second year of *Rubus acaulis* population trend monitoring. This protocol was developed by WYNDD botanist Walt Fertig in 1999. The objective of this monitoring is to detect whether or not the population is increasing, decreasing or remaining stable. Considering the *Rubus* inventories done when the plant was "discovered" in 1996, and additional surveys this summer, it is very likely that this is the only occurrence of this species on the Bighorn. The population was slightly down in 2001 compared to 2000, which may have been due to an extremely dry year.

Cymopterus williamsii, a Bighorn endemic, and *Physaria lanata*, WYNDD Species of Concern, were searched for a second year in 2001. Putting these plants on our "radar screen" will give us data to help determine the conservation status of these plants, and will help determine if any projects we have could be negatively affecting these plants.

WYNDD botanist Walt Fertig conducted a field search based on GIS predictive modeling for *Festuca hallii*. The one "known" occurrence on the Bighorn National Forest is a vague (location a best guess, "headwaters of Clear Creek") report from 1898. Fertig searched the potential habitat in Clear Creek, and also searched several potential areas on the north end of the National Forest. He did not find any *F. hallii*.

2001 Sensitive Species Survey

Sensitive Species	New Occurrences in FY 2001	Expanded Occurrences in 2001	Previously Known Occurrences
Agoseris lackshewitzii	5	0	31
Aster mollis	1	0	33
Arnica lonchophylla	13	0	8
Festuca hallii	0	0	1(?)
Penstemon caryi	0	0	12
Rubus acaulis	0	0	1
Sullivantia hapemanii	0	0	14

RANGE

PROGRAM SUMMARY

The Bighorn National Forest experienced its third consecutive year of drought in 2001, with significant affects on the herbaceous resource. Plant growth was slow due to the dry conditions during the 2000 growing season, followed by very little winter moisture. Precipitation was approximately 60% of normal. The following table illustrates the efforts the livestock operators put into their management in an attempt to meet resource needs and reduce impacts during the drought.

Grazing Use Summary

Number of Permittees	*% Difference In Livestock Numbers*	*% Difference In Days*	*# FS Sent Home*	*# Went Home on their own*	*% Grazing the Entire Season*
99*	-14% cow/calf -36% yearling -40% sheep	50% permittees grazed less days than permitted	15	84	73% - No 19% - Yes 8% - Non-use

* Permittees may run on more than one allotment, and if counted by allotment there are 120.

Specific data by Allotment and Permittee is available upon request. It is important to note that 84 of the 99 permittees voluntarily took their livestock home before the permitted removal date because they had reached the prescribed limits of use. Forest-wide, permittees turned on 14% fewer cow/calf pairs, 36% fewer yearlings and 40% fewer sheep in an attempt to cope with the drought conditions.

It is also important to note that individuals monitoring clipping transects during the grazing season observed that plants were so dry due to the drought conditions that breakage was occurring, and ranges appeared to be grazed much heavier than they actually were in many cases.

Based on the drought and grazing impacts during the past three years, many pastures and several allotments will have grazing deferred until later in the 2002 season, or will be rested completely to allow plants to recover. Also, adverse action is currently being taken against 4 grazing permittees for permit violations and excessive use over the past several years.

Vegetative Treatments

Approximately 1,827 acres of sagebrush were treated with fire on the Medicine Wheel/Paintrock District. Prescribed fire was conducted on decadent sagebrush stands in order to reduce fuel loadings, improve wildlife habitat, and enhance species diversity.

Invasive Weed Management

In 1996, the Forest established Partnership Agreements with Bighorn, Johnson, and Washakie County Weed and Pest Districts to treat invasive weeds in those counties. Weeds located on Forest land within Sheridan County are treated by Forest personnel.
The partnership agreements are very cost effective for the Forest, since we do not have to maintain equipment, train personnel, or store chemicals for those areas covered under the agreements.

When the partnerships were initiated five years ago, we treated approximately 1,600 acres of weeds across the Forest. This acreage is based on the amount of chemicals applied each year. In 2001, we treated the same area, but previous applications have thinned the weed infestations, and the coverage rate was 584 acres on a chemical-applied basis. This indicates that our efforts have been successful in reducing the invasive weed populations on the Forest.

Allotment Management and Analysis

The Medicine Wheel/Paintrock Ranger District continued with NEPA analysis on the 65,185 acre Devil's Canyon Analysis Area. The projected completion date for this Environmental Assessment and Decision Notice will be 2002, if the cultural resource inventory is complete.

The Tongue Ranger District began work on the Environmental Impact Statement for the 172,119 acre Tongue Drainage. It is anticipated that the EIS will be published in 2003.

MONITORING REQUIREMENT:
Range Condition and Trend

No condition or trend data was collected during the 2001 field season. Range management emphasis has been placed on utilization measurements rather than condition and trend data collection (*See* District utilization tables, Appendix A). Riparian classification was collected on the Paintrock Analysis Area during 2001 field season, identifying current ecological status of those riparian areas.

MONITORING REQUIREMENT:
Carrying Capacity

There is one active Coordinated Resource Management Plan for the Forest that is continually revised and updated as changes in management are needed.

MONITORING REQUIREMENT:
Forage Utilization

The following table is a Forest-wide summary of the riparian vegetation monitoring results for 2001. Utilization tables for upland and riparian vegetation on the Ranger Districts are found in Appendix A.

Forest Riparian Vegetation Monitoring Results

I. Number of Allotments	**MW/PN [1]**	**PR [1]**	**TNG 1**	**Forest**
Total Number of Active Allotments	**34**	**17**	**28**	**79**
Allotments Monitored by Permittee	10	9	5	24
Alltmnts Unknown-have not received data yet	1		11	12
Allotments Monitored by Forest Service	24	10	14	48
Allotments in Non-use	2	2	2	6
Percent of Allotments Monitored by Permittees	30%	53%	18%	30%
Percent of Allotments Monitored by FS	70%	59%	50%	61%
Allotments Exceeding Standards to the Point of Discussing/Implementing Resource Recovery Period	4	1	13	18
II. Number of Permittees				
Total Number of *Active* Permittees	**37**	**29**	**32**	**98**
Number of Permittees Providing Transect Data	18	9	9	36
Permittees not known if collected data	1	12		
Percent of Permittees Providing Transects	48%	31%	28%	37%
Permittees in Non-use	2%	2%	2%	6%
III. Number of Forage Utilization Transects	[2]			
Transects Read by Permittees	35	59	11	105
Number that Met Standards	31	46	9	86
Percent that Met Standards	89%	78%	82%	82%
Transects Read/Spot-checked by USFS	**14**	**56**	**73**	**143**
Number that Met Standards	5	36	33	74
Percent that Met Standards	36%	64%	45%	52%
Transects Read by FS/Permittee Together	**2**	**13**	**11**	**26**
Number that Met Standards	2	13	8	23
Percent that Met Standards	100%	100%	73%	88%
Total Number of Transects Read	**51**	**128**	**95**	**274**
Total Number of Transects Meeting Standards	38	95	50	183
Total Percent of Transects Meeting Standards	75%	74%	53%	67%

	MW/PN	PR	TNG	Forest
IV. Number of Willow Utilization Transects	[3]			
Transects Read by Permittees	1	0	0	1
Number that Met Standards	1			1
Percent that Met Standards	100%			100%
Transects Read/Spot-checked by USFS	1	0	15	16
Number that Met Standards	1		0	1
Percent that Met Standards	100%		0	6%
Transects Read by FS/Permittee Together	**0**	**0**	**0**	**0**
Number that Met Standards				
Forest Riparian Vegetation Monitoring Results				
Total Number of Transects Read	**2**	**0**	**15**	**17**
Total Number of Transects Meeting Standards	2	0	0	2
Total Percent of Transects Meeting Standards	100%	0	0	12%
V. Number of Aspen Utilization Transects	[4]			
Transects Read by Permittees	6	0	0	6
Number that Met Standards	6			6
Percent that Met Standards	100%			100%
Transects Read/Spot-checked by USFS	**0**	**0**	**0**	**0**
Number that Met Standards				
Percent that Met Standards				
Total Number of Transects Read	**6**	**0**	**0**	**6**
Total Number of Transects Meeting Standards	6			6
Total Percent of Transects Meeting Standards	100%			100%
VI. Photo Point	[5]			
Recorded by Permittee	31	123	15	169
Recorded by Forest Service	12	0	20	32
Recorded by FS/Permittee	5	0	0	5
Total Photo Points Recorded	48	123	35	206

[1] MW/PN is Medicine Wheel/Paintrock Ranger District, PR is Powder River Ranger District, and TNG is Tongue Ranger District.
[2] Not all monitoring information has been turned in to date by permittees.
[3] No intensive monitoring of willow utilization by wildlife and livestock was conducted on various allotments.
[4] Utilization conducted in aspen understory.
[5] Majority of photopoints are tied to aspen, willow, and streambank transects.

INSECTS AND DISEASE

PROGRAM SUMMARY

An aerial survey of insect and disease conditions on the Bighorn National Forest was conducted late July and early August 2001 by Erik Johnson (Region 2, Forest Health Management). The survey covered the entire Bighorn National Forest and BLM, state, and private lands to the east and south of the Forest. The survey is used to detect current damage by causal agent, acres affected, and where possible, the number of trees killed. Copies of the resulting sketch maps are being sent to the Supervisor's Office.

Relatively high levels of **mountain pine beetle** (*Dendroctonus ponderosae*) were again recorded in the ponderosa pine forest type on the eastern edge of the Forest. While this activity was slightly lower than reported in the 2000 aerial surveys, it is an increase over 1998 and 1999. In 1998, there were 1,793 trees killed by mountain pine beetle in concentrated spots and scattered, individual trees. In 1999, a total of 2,241 trees were killed on 1,281 acres. In 2000, 5,909 trees were killed on 2,884 acres. In 2001, 4,666 trees were killed on 489 acres. The number of ponderosa pine killed on adjacent BLM, state and private lands was higher then on national forest land, as indicated in Table 1. The ponderosa pine zone on the eastern edge of the Forest will be an area that should be watched over the next few years, as this could be a growing infestation. Areas experiencing concentrated mortality in the northern portion of the east slope include: along Horse Creek Ridge/Tongue River Canyon, along Highway 14, west and south of the town of Story, and Rock Creek. Highway 14 and the area from Story south to Highway 16 appear to be the highest concentration. High morality areas in the southern portion of the Big Horns include: Fraker and Gardner Mountains, and Specimen Hill.

The nearly 4,000 acres affected by **limber pine decline** that was reported in 2000 has been reduced to 1,424 acres. The most affected area is Tensleep Canyon. Limber pine decline is a combination of mountain pine beetle, white pine blister rust (*Cronartium ribicola*), dwarf mistletoe (*Arceuthobium cyanocarpum*), and possibly needle cast diseases. Endemic levels of mountain pine beetle are currently found in the lodgepole pine forests.

The significant areas of the **subalpine fir decline** on the Bighorn National Forest reported in 2000 (72,155 trees on 33,606 acres) shows a marked decline in 2001 (19,966 trees on 3,944 acres). The fluctuation in the survey numbers may be attributed to the needle retention characteristics of subalpine fir. Because subalpine fir retains its red needles after it dies longer than other conifer species, these totals may be cumulative from the last 2, 3 or even 4 years and then decrease due to needle drop. Nonetheless, the amount of tree mortality recorded in the 2001 aerial survey represents a significant increase from that of 1997. Subalpine fir decline is caused primarily by a combination of western balsam bark beetle (*Dryocoetes confusus*) attacks and root disease (*Armillaria* or *Annosus*).

Spruce beetle (*Dendroctonus rufipennis*) killed an estimated 995 Engelmann spruce trees on 305 acres. This is a decrease in both number of trees and acres affected from the numbers reported in the 2000 survey (1,320 trees and 1,211 acres). The most affected areas are north of Highway 14, in particular, along FSR 15 adjacent to blow-down. The spruce beetle activity may still be a result of storm events in the mid-1990's that caused large areas of spruce-fir blow-down. Spruce beetle populations are known to increase in blow-down and then move to neighboring stands.

Douglas-fir beetle (*Dendroctonus pseudotsugae*) continues to remain at endemic levels in the area that was surveyed this year.

Table 1: Acres affected and trees killed estimated from the 2001 Forest Health Management aerial survey.

Pest Agent	Bighorn National Forest		Non-Forest Service Lands	
	Acres Affected	Trees Killed	Acres Affected	Trees Killed
Mountain pine beetle on ponderosa pine	108	1,712	381	2,954
Mountain pine beetle on lodgepole pine	20	268	33	271
Limber pine decline	150	-	1,274	-
Douglas-fir beetle	7	84	10	236
Subalpine fir decline	3,944	19,966	37	318
Spruce beetle	305	995	0.4	3
Total damage	4,534	23,025	1,735.4	3,782

The **lodgepole needlecast fungus** (*Lophodermella motivaga*) continues to be on the decline with no known epicenters detected since 1997.

Large areas of dead tops of lodgepole pine continue to be observed throughout its range - these areas appear gray from a distance because of all the weathered tops. This is caused by **Comandra blister rust** (*Cronartium comandrae*) that kills the tree from the top down. As most of the cones are produced near the top of lodgepole pine, this reduces the amount of seed produced to regenerate these stands.

Gypsy Moth trapping on the Forest and by cooperating agencies off the Forest has been ongoing. No moths were trapped in 2000. Continued detection monitoring is needed to keep this exotic pest from becoming established.

Other areas of concern for future surveys are East Duncum, which has experienced tree mortality in and around past harvest sites; and Shell Canyon, where a number of acres of Douglas fir mortality were reported. These spot surveys need to be rescheduled for 2002.

MONITORING REQUIREMENT:
Level of Insect and Disease Organism – Compliance with Schedule and Outputs

The Forest Plan projected 800,000 acres of insect and disease survey to be done annually. Per agreement with the Forest Health Management Service Center in Rapid City, complete Forest surveys are scheduled for every three years and were last completed in 2001. Spot surveys, such as what was accomplished in 2000, are conducted to determine the extent and intensity of specific agents.

Effectiveness Monitoring

Aerial surveys are effective in determining levels of infestation of various pests, but are not cost effective annually. Ground validation and spot aerial survey sampling are necessary to determine the exact Forest pest, population levels, and what, if any management actions may be warranted.

FOREST VEGETATION AND TIMBER

PROGRAM SUMMARY

Forest vegetation, its condition, management, and the resultant timber commodity outputs are included in this monitoring and evaluation section.

The 2001 Forest outputs for forested vegetation and related activities are shown on the table of projected and actual outputs (Table 1). The outputs are those included in the Forest Plan monitoring section. The data in this report is from cut and sold, PTSAR, and STARS reports, and planned accomplished records in the Forest RMACT database. The Forest sixteen-year trends in timber management outputs are also shown in Table 1.

MONITORING REQUIREMENT:
Clear Cut Harvest Unit Size

Silvicultural prescription, sale design plans, sale maps, and on the ground layout of sales were reviewed for compliance with the maximum size limits; no created openings greater than 40 acres were found.

MONITORING REQUIREMENT:
Assure Regeneration Within Allowable Time Frames of Final Harvest

In FY 2001, the Forest surveyed approximately 1,730 acres of commercial timber sales to determine the status of the regeneration on final harvest units, as defined in 36 CFR 219.27. The 2001 surveys will be reviewed and certifications made from them in 2002. Continued monitoring, and/or corrective actions are planned for those areas not certified as regenerated. Surveys of past tree plantings indicate generally good success. Harsh site conditions and dry planting years have reduced some survival in the Boyd Ridge and Lick Creek salvage areas.

Non-traditional vegetation management projects continue to be implemented without silvicultural prescriptions on the Forest, including ski area expansion, prescribed burning, and habitat improvement projects. Current policy is to have a silvicultural prescription prepared for all vegetation manipulation projects.

Off-site trees transplanted in the bowl quarry of US Highway 14 construction have resulted in failure, with only a handful of the 3-4 foot transplants surviving. The area was re-planted with native stock in 2001.

There is no evidence in the database of surveys to assure regeneration, or certification that past aspen regeneration treatments have met Forest Plan stocking requirements.

Qualitative surveys of recent wildfires have shown varied levels of regeneration. Without harvest, there is no legal timeframe to regenerate these wildfires, however, it is good management to monitor their progress. The West Pass Fire shows very little regeneration. Continued monitoring of these and other recent fires should continue to determine status of regeneration.

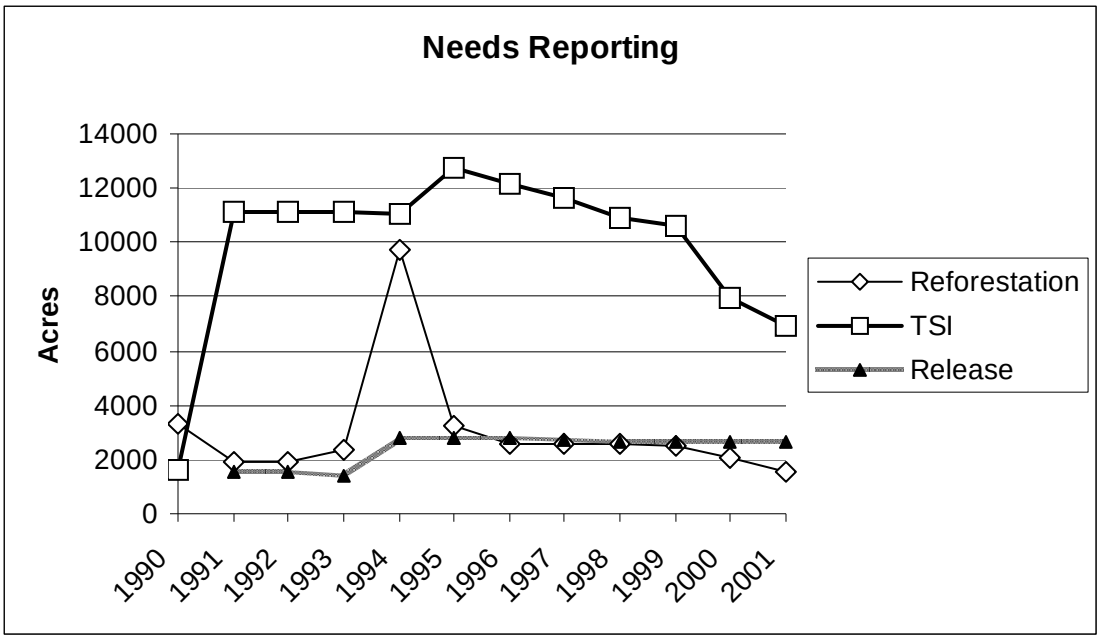
MONITORING REQUIREMENT:
Assure Reforestation and TSI Treatments Are Current and No Backlog Created

Last year the activities in the RMRIS database were moved to the new RMACT program. This move caused some discrepancy between previous years Needs acres, particularly in Timber Stand Improvement (TSI). Past monitoring reports recommended that the Needs portion of the database for reforestation and TSI should be cleaned up - the differences shown this year are a result of the lack of that maintenance. While the reforestation data reflects an accurate assessment of our Needs, the Needs section for TSI and release will have to be cleaned in order to use this system to accurately calculate the Needs.

At the current rate of TSI we are about 116% of the projected output for the planning period. This is within the 20% Forest Plan monitoring plan guideline, beyond which there would be a need for further evaluation.

The reforestation needs report in RMACT shows 1,581 acres needing reforestation (2,087 last year). To continue this progress, the Forest should continue the commitment to the reforestation program.

The RMACT database shows 6,920 acres needing Timber Stand Improvement (TSI), down from 7, 309 in RMACT and no change in acres needing release (2,683 acres).



MONITORING REQUIREMENT:
Compliance with Schedule and Outputs

The 1985 Forest Plan included a schedule of timber sales, and a table of outputs projected over the planning period. The table of outputs for timber includes not only the volume offered, but also acres thinned, reforested, and harvested by regeneration method. The Forest Plan monitoring plan identifies a need to initiate further evaluation when there is a deviation of 25% over a three-year period in compliance with scheduled outputs.

The schedule was updated with Forest Plan Amendments 1, 2, and 3, after which time it was determined that the schedule was an administrative decision, and therefore did not need to be formalized with a plan amendment.

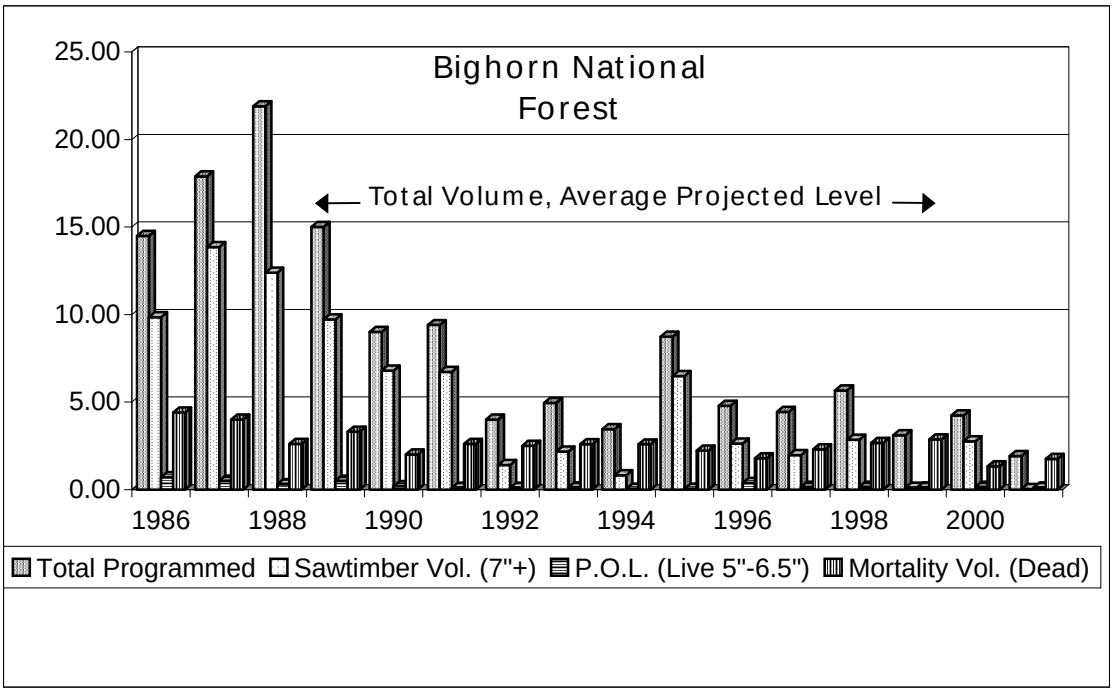
A comparison of accomplished vs. projected outputs has been done with the annual monitoring reports. Table 1 shows the annual accomplishments and compares the total to what was projected in the Forest Plan.

Current commercial timber offerings are below Forest Plan projections. Through the end of FY 2001, after sixteen years of implementation, the Forest has offered 33.1 million cubic feet, MMCF (132.9 million board feet, MMBF), compared to a projected output of 67.3 MMCF (261.5 MMBF), or 49 percent of the projected ASQ output (52% last year). The acres offered for harvest by regeneration method are also below projected outputs by over half. There are a number of reasons for this difference:

- Given a choice between meeting Forest Plan Standards or projected outputs, the Forest has chosen to meet or exceed the Standards and Guidelines. This has produced lower than projected outputs.
- Funding levels for many programs are below Forest Plan projected levels.

- Appeals and litigation of harvest decisions.
- Since 1993 the Forest has been under an administrative timber sale offer cap of between 4 ½ to 5 MMBF per year. This was the outcome of an Allowable Sale Quantity (ASQ) Amendment prepared in 1993 that was not signed due to concerns over the breadth of the decision. It was determined that a more comprehensive analysis provided by Forest Plan revision was necessary in order to adequately address ASQ (*See* revision topics, page 6).

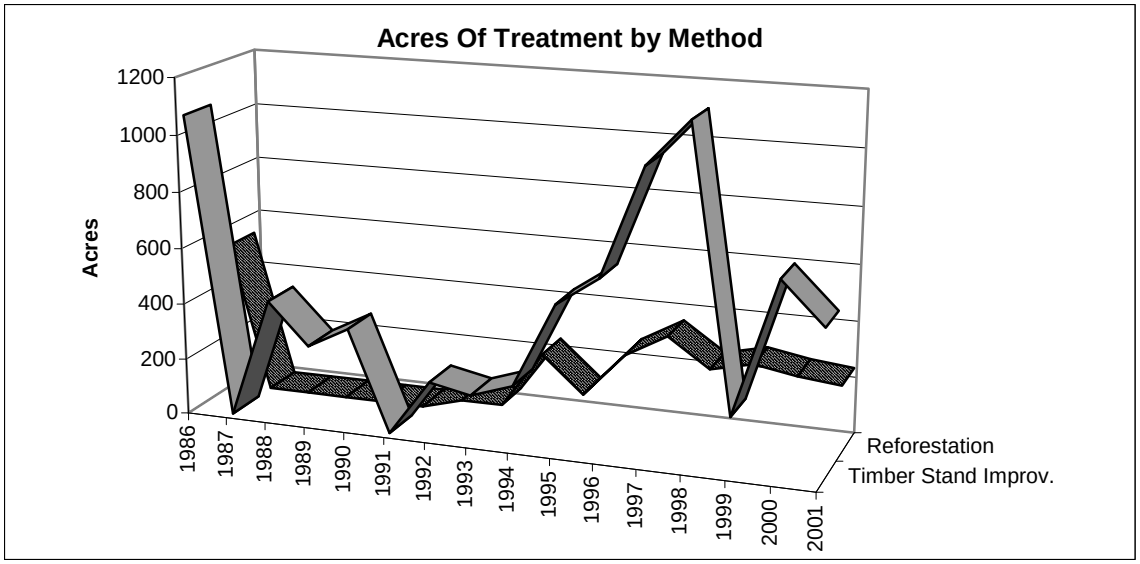
The following figure graphically shows the difference between the projected ASQ and our current outputs. A more accurate projection of timber harvests methods and resultant output in wood fiber is scheduled to occur during the Forest Plan revision process.



The Ranger Districts continue to see demand for fuelwood and POL sales. Because of the extreme fire season in 2001, the Forest implemented restrictions which were designed to reduce the risk of man-caused fires. This resulted in a reduced amount of fuelwood, posts, and poles that were harvested. The cumulative removal continues to exceed projections (180%), but is down from last year (187%). A more accurate projection of outputs should be derived during the Forest Plan revision process.

Thinning/release (TSI) projects were accomplished on 534 acres in 2001. Over the planning period the Forest has accomplished 116% of the projected amount of TSI, but there still remains a substantial backlog of TSI. A more accurate projection of thinning/release needs should be derived during the Forest Plan revision process.

The Forest completed 248 acres of tree planting and no acres of site preparation for natural regeneration because of the fire restrictions, and certified regeneration without site preparation on 1,037 acres. Over the planning period the Forest has accomplished 49% of the projected amount of reforestation, up from 47% last year.



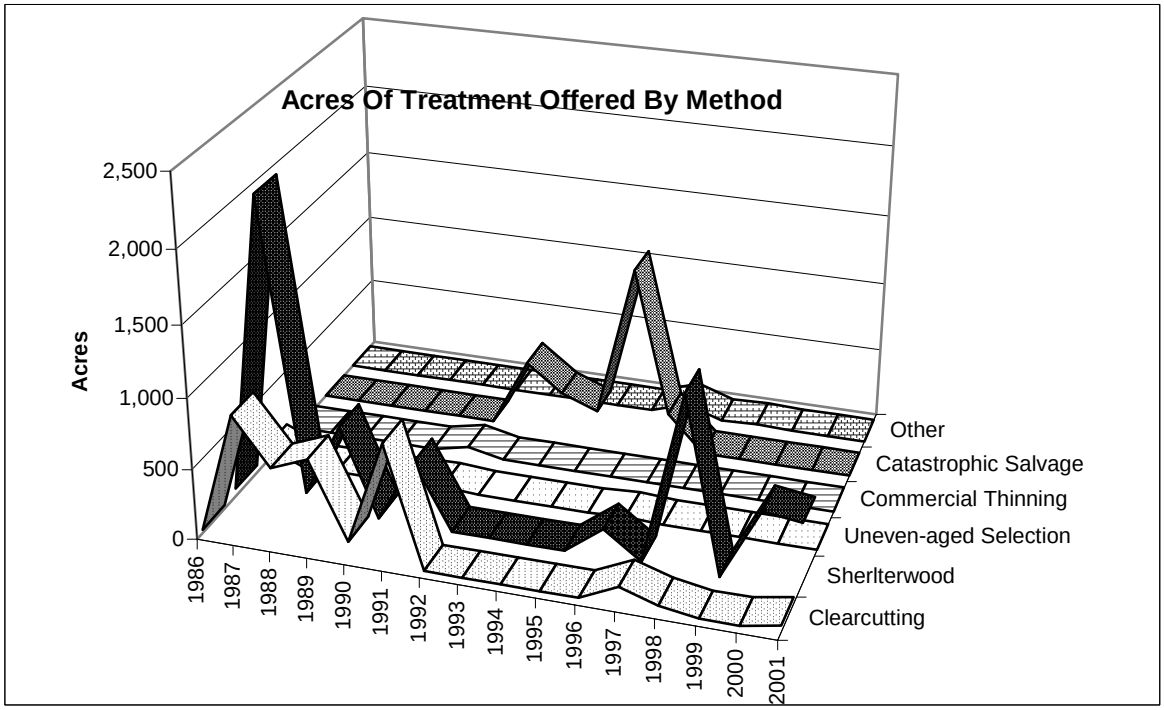


TABLE 1 – Timber Outputs by Volume

Activity	Total Programmed	Sale Volume Offered	Sawtimber Vol. (7"+)	Sawtimber Vol. (7"+)	POL (Live 5"-6.5")	POL (Live 5"-6.5")	Mortality Volume (dead)	Mortality Volume (dead)
Unit of Measure	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF
2001-2010 Average Projected Output	16.5	4.30	14.50	3.80	0.60	0.10	1.40	0.37
1986	14.50	3.30	9.85	2.58	0.70	0.11	4.40	1.16
1987	17.90	4.70	13.86	3.63	0.50	0.08	4.00	1.06
1988	21.90	5.80	12.39	3.25	0.30	0.05	2.60	0.69
1989	15.00	4.00	9.72	2.55	0.50	0.08	3.30	0.87
1990	9.00	2.30	6.80	1.78	0.20	0.03	2.00	0.53
1991	9.40	2.50	6.72	1.76	0.10	0.02	2.60	0.69
1992	4.00	1.00	1.40	0.37	0.10	0.02	2.50	0.66
1993	4.94	1.17	2.16	0.57	0.13	0.02	2.59	0.68
1994	3.45	0.87	0.82	0.19	0.05	0.01	2.58	0.68
1995	8.74	2.17	6.48	1.57	0.04	0.01	2.22	0.59
1996	4.79	1.11	2.62	0.56	0.38	0.10	1.79	0.45
1997	4.43	1.03	1.97	0.41	0.16	0.04	2.30	0.58
1998	5.67	1.15	2.85	0.63	0.16	0.04	2.66	0.48
1999	3.10	0.75	0.11	0.03	0.13	0.02	2.86	0.70
2000	4.23	0.84	2.76	0.57	0.15	0.02	1.32	0.24
2001	1.91	0.38	0.03	0.07	0.13	0.03	1.75	0.28
Total Projected Output	261.5	67.3	232.0	60.8	7.6	1.2	21.9	5.8
Total Actual Output	132.9	33.1	80.5	20.5	3.7	0.7	41.5	10.3
% of Projected Output	51%	49%	35%	34%	49%	56%	189%	179%

TABLE 1 – (cont.) Timber Outputs by Acres

Activity	Timber Stand Improve-ment	Refor-estation	Clear-cutting	Shelter-wood	Uneven-aged Selection	Comm-ercial Thinning	Catas-trophic Salvage	Other	Total of Area Cut
Unit of Measure	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
2001-2010 Average Projected Output	400	300	1,006	696	89	0	0	0	1,791
1986	1,060	525	22	52	106	0	0	0	180
1987	0	0	881	2,159	0	0	0	0	3,040
1988	426	0	555	108	0	0	0	0	663
1989	280	0	657	629	0	0	0	0	1,286
1990	357	0	118	10	13	0	0	0	141
1991	0	0	852	458	17	54	0	0	1,381
1992	200	40	0	0	0	0	486	0	486
1993	170	40	0	0	0	0	297	0	297
1994	220	242	0	0	0	0	198	0	198
1995	519	113	0	0	0	0	1,282	0	1,282
1996	622	272	0	202	15	0	256	84	557
1997	1,009	355	124	14	0	0	0	0	138
1998	1,169	255	43	1,227	0	0	0	10	1,280
1999	201	290	0	0	0	0	0	0	0
2000	678	264	0	507	0	0	0	0	507
2001	534	248	50	470	0	0	0	0	520
Total Projected Output	6,400	5,450	17,771	9,946	1,684	none	none	none	29,401
Total Actual Output	7,445	2,644	3,302	5,836	151	54	2,519	94	11,956
% of Projected Output	116%	49%	19%	59%	9%	n/a	n/a	n/a	41%

MONITORING REQUIREMENT:
Status of Lands Not Suited for Timber Production

The status of lands not suited for timber production is scheduled for re-evaluation every ten years in the Forest monitoring plan. The last analysis was completed in 1991 with Forest Plan Amendment Number Seven. Monitoring requirements regarding review of suitability status specify that, "variability which would initiate further evaluation" as "data indicates unsuitable lands may be suitable". Monitoring has identified some areas recorded as unsuitable that may be suited, most notably the lower elevation Fool Creek #1 clearcuts, and the lower elevation clearcuts of the Ghastly Timber Sale. These areas have been noted, and will be included in the suitability analysis underway as part of the Forest Plan revision process that began in 2001.

Effectiveness Monitoring

The Standards and Guidelines pertaining to vegetation management have a significant affect on the amount and kind of vegetation management allowed, and the resultant outcomes and outputs available, including desired forest conditions and wood fiber volume offered.

There is inconsistent interpretation of the Standards and Guidelines and how they are to be administered throughout the Forest. Standards are not being interpreted as a standard, but a minimum, with the optimum level above the Forest Plan standard. The difference between Standards and Guidelines is also inconsistently interpreted, resulting in guidelines being applied as a standard. This has resulted in a different set of standards than those described in the Forest Plan, different outcomes, and fewer outputs than projected.

The Forest often receives pressure to change Standards and Guidelines when new studies, research, or philosophies are proposed. This pressure must be tempered with the need to apply consistent Standards and Guidelines over the planning period, as the standards and outputs need to be developed and applied in an integrated manner.

Current Standards and Guidelines for silviculture do not provide a full range of silvicultural methods. The current Regional Guide provides revised Standards and Guidelines for silviculture, that if adopted, would help the Forest move towards ecosystem management.

Monitoring in 2001 has again identified a need for the Forest to clarify the requirements for certification of regeneration. Use of the Regional Guide standards is recommended.

Validation Monitoring

The acres of treatment by method from the Forest Plan are listed on Table 1. Since the plan was implemented, the Forest has not matched this projected mix, or the projected wood fiber outputs. Total acres harvested are 41% of the total projected for the planning period, while reforestation acres are 49% of the projected output, and ASQ is 49% of projected output. It appears that although the total amount of acres and outputs are less than half the projected amounts, the ratio of acres and volume are consistent. During the Forest Plan revision process, there should be a concerted effort to validate the scheduled outputs and the mix of each of these treatment methods.

The Bighorn National Forest management area designations have been found to be too small in size and too numerous in a given watershed to manage for a dominant use on a watershed scale. Watersheds currently do not have a dominant use, or management emphasis, but rather the management emphasis areas are averaged together. This averaging results in management for the average rather than managing for any particular emphasis area. Because of this, management areas are often overlooked in project initiation and implementation. This affects the ability to meet Forest Plan objectives, outcomes, and outputs.

RECREATION

PROGRAM SUMMARY

Forest visitation was similar to that reported in 2000. However, highway traffic increased by 5 percent on US 14, and 2 percent on US 16 from last year.

A new Campground Concessionaire Permit was issued to Gallatin Canyon Campgrounds, a division of Canyon Enterprises, Inc. on January 1, 2001. Gallatin CG provides an acceptable level of campground operations and maintenance, and is permitted for 5 years with an optional extension for an additional 5 years. The concessionaire completed several maintenance projects funded by campground receipts, including retrofitting two chemical flush toilets at Sitting Bull Campground, and installing fire grates at Doyle Creek, Boulder Park, and Lost Cabin Campgrounds.

The Forest funded a number of maintenance projects including: new vault toilets at Lake Point Picnic Area, Dead Swede Campground, and Sibley Lake Picnic Ground; new potable water wells with hand pumps were installed at South Fork, Lost Cabin, Crazy Woman, and Doyle Creek Campgrounds; and closure gates were placed at Owen Creek and North Tongue Campgrounds. Major reconstruction occurred at Shell Creek Campground. Shell Creek is located along Forest Road 17, south of US Highway 14, near Shell, Wyoming. Work included new restrooms and site furnishings (grills, tables, and fire rings) at 15 camping spurs.

The Forest continued its inventory of deferred maintenance (20% per year) for developed sites and trails. This data provides estimates for future funding of backlog maintenance, annual preventative maintenance needs, and identifies capital improvement projects. Twenty-nine (29) recreation sites were surveyed, primarily on the Medicine Wheel-Paintrock Ranger District, and 170 miles of trail were inventoried.

During the summer season, we focused additional personnel on some dispersed recreation activities -- primarily site “clean-up”, education, and Forest Service presence.

Volunteer groups and individuals were used throughout the Forest to help perform a variety of recreation duties such as trail maintenance, campground and facility maintenance, signing, patrols, visitor contacts, interpretation at visitor centers, horseback patrols, trash pick-up, cave clean-up, and grooming cross country ski trails.

As part of a national program to obtain more reliable recreation use information, we participated in the National Visitor Use Monitoring Survey. A total of 142 six-hour surveys were conducted at randomly selected recreation sites and locations across the Forest. Results should be available in September of 2002.

A growing problem is developing with the 14-day stay limit at the more popular developed campgrounds. Visitors are avoiding the stay limit by reserving a site for 13 or 14 days and then turning around and reserving it for another 13-14 days. The current

Forest Supervisor's order should be revised to address this concern. The 14-day stay limit for dispersed camping should also be reviewed.

As noted in prior monitoring reports, participation in dispersed motorized recreation activities continues to grow. Many miles of user-created trails occur through meadows and streams in designated "C" areas (motorized vehicles in these areas are authorized to travel off roads and trails).

MONITORING REQUIREMENT:
Developed Recreation Use

The Forest experienced little to no growth in recreation visitation during 2001. Visitor use to campgrounds and picnic areas was similar to 2000. In contrast, highway traffic use, as reported by the Wyoming Department of Transportation increased 2-5 percent.

Three interpretive sites were operated in 2001 in cooperation with the Rocky Mountain Nature Association.

- Shell Falls remains a heavily visited site for people traveling through the Bighorn National Forest. Approximately 350,000 people stopped at Shell Falls during the 2001 season. Sales of interpretive materials at this outlet continue to lead in the region with $84,834 in 2001. This represents a decrease of 5.9% in sales from 2000.

- Burgess Junction Visitor Center had approximately 55,000 visitors in 2001. Of these, 5,625 attended a formal talk or program. Sales of interpretive materials were $84,577 - a decrease of 2.3% from 2000.

Medicine Wheel visitation remained strong in 2001 with 15,207 people, including 921 Native American Indians who conducted 218 ceremonies. This represents an increase of 2,000 visitors from last year. Visitor comments show strong support for the current site management. Site improvements this year included replacement of the wire fence around the wheel with a visually pleasing post and rope enclosure, hardening of paths around the outside of the wheel, and construction of a new toilet.

Volunteers play a critical role in providing public service. We operated several remote ranger stations (Porcupine and Tyrell) with volunteers. The volunteer at Tyrell made over 2,000 public contacts in the summer of 2001.

MONITORING REQUIREMENT:
Developed Site Facility Condition

Operation of most developed recreation facilities continues under the terms of a new special use permit reissued to Gallatin Canyon Campgrounds, a division of Canyon Enterprises, Inc., with offices in Bozeman, Montana. Campgrounds were generally maintained in excellent condition, even though rehabilitation and/or redesign to meet resource needs and user desires is warranted. Many of the existing vault toilets do not meet Regional SST ("Sweet Smelling") standards.

At other developed sites (e.g., trailheads, picnic areas, and interpretive facilities) maintenance and health/safety requirements such as hazard trees removal are addressed on a priority needs basis. Potable water testing was performed by one person in 2001 to improve accountability and efficiency. Compliance patrols were done as time and funding allowed. Measurement factors (Meaningful Measures) such as Setting, Safety, Security, Responsiveness and Condition of Facilities are not met on a routine basis with the present level of funding.

Significant construction projects in 2001 included: remodeling Shell Campground (15 units) and new restrooms at 3 area campgrounds (*See* Summary). The Forest is also concentrating on improving its potable water supply with the drilling of new wells.

The water system developed in 2000 at the Burgess Dump Station was open to the public in May of 2001. The Willow Creek shed near Burgess Junction was demolished and materials hauled off-site by a Forest road crew. Forest recreation personnel and volunteers reconstructed the fence at Little Goose Campground that had been destroyed by vandals in 2000.

Replacement of the interpretive signs and repairs to other on-site improvements at Shell Falls Interpretive Site are still needed.

MONITORING REQUIREMENT:
Dispersed Recreation Use and Experience Level

There were three full-time and one half-time dispersed recreation personnel assigned to Forest patrol during the 2001 summer season for the purpose of maintenance, signing, law enforcement, visitor education, and contacts. These employees were challenged by increasing numbers of recreation users and violations. Hunter patrols prior to opening day and during the early stages of the hunting season are effective and their continuation is recommended. Volunteer help is critical in providing dispersed services and many District programs rely heavily on their use. Tongue Ranger District focused volunteers in the Woodrock, Woodchuck Pass, and Schuler Park areas of the Tongue District. Several volunteer projects provided additional support including: the Back Country Horsemen packed out an abandoned snowmobile, and a high school class and a National Outdoor Leadership School group conducted a clean-up day at Tongue River Cave.

The number of horse users camping at dispersed sites across the Forest is increasing, with a larger number of out-of-state recreationists. A pair of "horse-back" volunteers worked the Woodchuck Pass area and provided information and education for these users.

As reported in past monitoring reports, traffic counts on some Forest roads (West Tensleep Lake, Sourdough, and Crazy Woman Canyon) exceed the projected number of visitors specified in the Forest Plan. Although of short duration, this indicates a need to develop management strategies to deal with increasing visitor numbers. Additional resources would allow much needed monitoring of this and other recreational uses.

Motor vehicle traffic on native surface roads during the extended hunting seasons continues to have a significant impact on the resource due to wet road conditions. Hunting seasons for elk now last from September 1 until mid-December (fifteen-week period of over 25% of the snow-free year). Motorized travel on native surface roads cuts through water diversion structures and accelerates erosion. Use during the fall has the biggest impact on road drainage structures due to alternating periods of snowfall and warm weather.

Dispersed long-term trailer camping is again a major concern. The number of desirable dispersed campsites is limited. In some instances trailers are left unattended for long periods of time. Occupancy of these sites for "trailer storage" exacerbates the problem. The creation of new sites and continual use of those adjacent to sensitive riparian environments contributes to water quality problems. It is recommended the Forest revise the 14-day camping order, implement an intensive education program, determine acceptable limits for dispersed camping, and provide alternatives to facilitate this use.

MONITORING REQUIREMENT:
Off-Road Vehicle Damage

Evidence of off-road and trail vehicle use is increasing. With a limited number of seasonal employees funded in the dispersed program, enforcement and contact with ORV users is minimal. Some ORV users refuse to follow regulations. The concept of "unrestricted motorized travel" in the "C" areas encourages new user-created roads. Illegal motorized vehicles causing resource damage is the most frequently cited offense on the Forest, accounting for more than 20% of the total violations issued. This issue is currently being addressed in the Forest Plan Revision.

One dispersed recreation fire prevention officer specifically addressed off-road use in the Red Grade area on weekends with visitor contacts, education and when necessary, enforcement. The Forest also utilized the restitution money from the "Mud Bog" incident in 2000 (details in the 2000 Monitoring Report) to reclaim resource damage.

Approximately 60 new posts and road signs were installed to replace missing or damaged signs along Forest roads.

MONITORING REQUIREMENT:
Dispersed Campsite Condition

Campsite numbers and use of dispersed campsites continues to increase as observed on field reports. Dispersed site inventories were done on the Devil's Canyon road and in the Battle Park area as new sites were observed. A concerted effort should be made to conduct inventories in specific watersheds. Sites inventoried since 1998 have been entered into a GIS database to aid in Forest planning, with pertinent information available and a "hot link" to site photographs.

MONITORING REQUIREMENT:
Trail Construction and Reconstruction

The Forest employed a seven-person trail crew in 2001. Priority work included fifteen miles of heavy trail maintenance, rerouting, and segment reconstruction (restoration of the Kearney Creek bridge). Volunteers working with forest personnel accomplished approximately 60 miles of light maintenance.

The R2 Pack String (mules) worked on the FDT 68 relocation project - transporting dump panniers loaded with gravel to harden a new tread surface.

Volunteer groups adopted various trails within the Bighorn National Forest for continued trail maintenance. Much of the Forest trail clearing/maintenance is done using volunteer groups. The Shoshone Backcountry Horsemen (BCHA) used pack animals to gravel the bridge approaches on FDT 38 above Solitude Lake. The Cloud Peak and Little Powder River BCHA met Saturday, June 6, 2001 during the National Trails Day event at Elgin Park. Downed trees were cleared from system trails and the Elgin Park Trailhead area was cleared of litter. Throughout the field season this group contributed many hours of labor to improve Forest trails. The Sheridan High School Biology class reconstructed the rock retaining wall on the northwest side of the Tongue River trail bridge and completed light maintenance on the trail to Tongue River cave. The Sheridan High School Environmental Science class maintained and constructed water bars on several miles of the Story-Penrose FDT 33.

The benefits of involving public volunteers are responsibility and pride of ownership. Sharing trail maintenance techniques, technology, and having the opportunity to work with diverse interest groups is of great value to all.

Approximately 170 miles of Forest trails were surveyed for deferred maintenance condition in 2001. Using this latest survey information, Meaningful Measures spreadsheets were updated. Prioritized segments of trail requiring corrective action were identified.

Critical maintenance needs are increasing yearly. A major problem is improper trail locations in riparian areas, fall line, and erosible soils. When heavy use occurs in conjunction with poorly located trails, rapid trail deterioration occurs. Recreational ATV use on the Bighorn National Forest is increasing rapidly and the associated trails are rapidly deteriorating. Trail erosion with resulting resource degradation is at unacceptable levels.

The Forest Trails Team began work on a “Forest Trails Strategy” to prioritize trail construction and maintenance needs. This plan will help identify, emphasize, and focus on critical trail related issues.

Deterioration of the Forest trail system bridges continues and is at a critical stage with several nonstandard bridges collapsing in the last eight years (discussed in FY96 Trail and Trail Bridge Accomplishment Report). The Forest completed three trail bridge inspections in FY 2001. In order to comply with provisions in Forest Service Manual 7736, all remaining trail bridges should be inspected immediately. Manual direction requires trail bridges to be inspected every 4 years.

MONITORING ADDITION:
Law Enforcement

The following table summarizes the number of law enforcement incidents (Incident Reports, Warning Notices, Violation Notices) beginning in 1994. Detailed data on specific types of violations (e.g., timber theft, fire violations, off-road vehicles, etc.) is available at our offices in Sheridan, Wyoming. Reporting incidents is a function of a number of field personnel.

Number of Reported Incidents	1994	1995	1996	1997	1998	1999	2000	2001
	1379	622	1066	1215	784	765	*	1250

* Data for 2000 is not available

Effectiveness Monitoring

Continued monitoring confirms views expressed in previous monitoring reports. For clarity/understanding and readability the FY 2000 "Effectiveness Monitoring" section is repeated.

"Lack of funding and personnel are the greatest challenges to providing a quality recreation program on the Bighorn National Forest. Recreation use continues to increase, placing additional demands on resources already taxed to their limits. The use of snowmobiles and ATV's is becoming more popular. The potential for resource damage is much greater with this equipment. All of these demands call for immediate attention. With a renewed emphasis on collecting and analyzing information on operational costs, we hope that additional funding can be justified. Nevertheless, it appears that the public will be asked to help through an even greater use of volunteer programs and/or through a greater share of their resources by initiating new user fees (like the ATV registration law passed in 2001). As stated in previous monitoring reports, management of dispersed recreation is the most important emphasis area for the future."

Validation Monitoring

Continued monitoring confirms views expressed in earlier monitoring reports. For clarity/understanding and readability the FY 2000 "Validation Monitoring" section is repeated.

"As the Forest moves forward with new planning efforts, some of the initial flaws in the current plan are being addressed. Previous concerns over use of Recreation Opportunity Spectrum (ROS) guidelines for management areas have been adjusted. Specifically, the building of roads in areas set aside to maintain Semi-Primitive Non-motorized experiences will be the exception in future planning. Changes will be available for public review in the Forest Plan Revision."

WILDERNESS

PROGRAM SUMMARY

The Bighorn National Forest was able to fund four seasonal Wilderness Rangers for the field season of 2001. Rangers patrol the 189,000 acre Cloud Peak Wilderness for the purpose of visitor contacts, *Leave No Trace* education, law enforcement, trail maintenance, and campsite cleanup. Wilderness use this year was similar to that recorded in FY 2000, with 70,000 recreation visitor days (RVDs).

The Forest continued to monitor air quality by sampling water in two wilderness lakes for acid deposition, with no decline in water quality to date. A visibility camera has been monitoring particulate matter in the wilderness since 1995. The camera, located on Grouse Mountain, was removed in the fall of 2001 and replaced with a new air quality monitoring station on Hunter Mesa, to continue to observe the long-term air resource of the Cloud Peak Wilderness.

MONITORING REQUIREMENT:
Condition of Use Areas

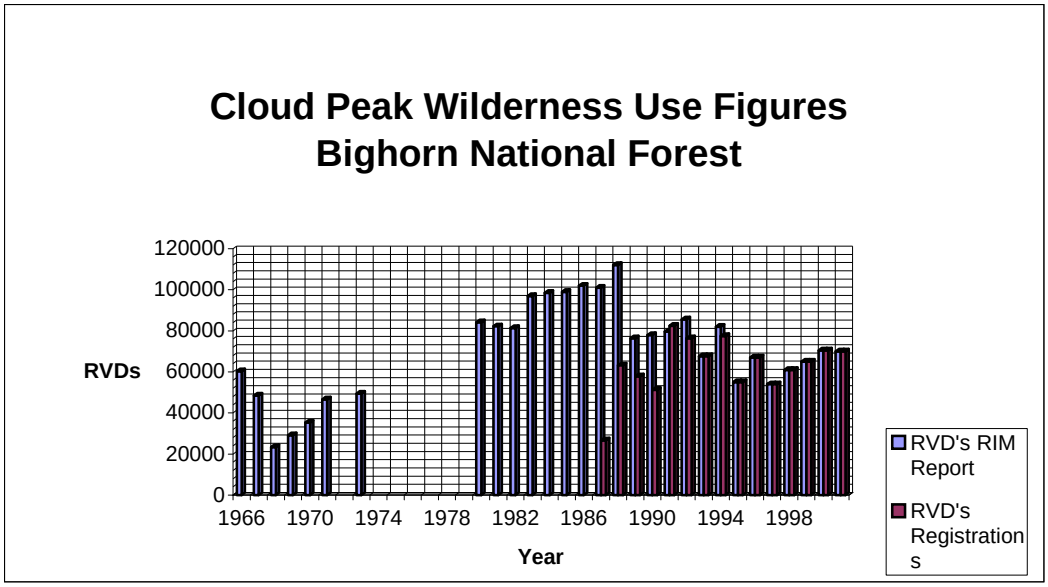
No monitoring for campsite conditions occurred in 2001. Due to a change in Standards and Guidelines (adopted in September 1998), monitoring will only be done every 4-5 years. We now measure the amount of bare ground created at campsites in high-use lake basins. The Forest completed its monitoring requirements in summer of 2000.

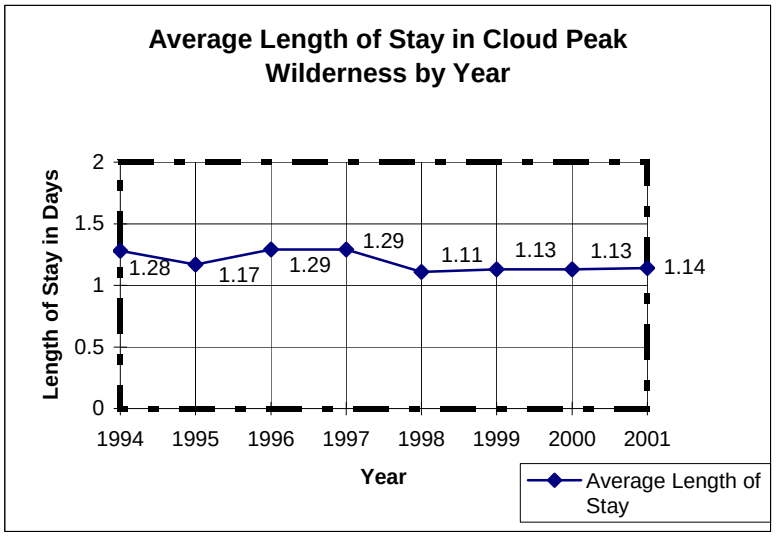
The condition of use areas was documented in the 2000 Monitoring Report. In general, the average amount of bare ground per campsite has increased nearly 24 percent from a 1996 survey. This is a negative trend, and with other observations, indicates that further indirect actions may be needed to mitigate the impacts at campsites in lake basins.

MONITORING REQUIREMENT:
Amount and Distribution of Wilderness Use

Use in the Cloud Peak Wilderness was nearly the same in 2001 as in the previous year. Use for 2001 totaled approximately 70,000 recreation visitor days (RVDs). Average length of stay remains at one night. The distribution of users is approximately 90% hikers and 10% horse users. A small number of visitors access the wilderness on skis or snowshoes. The visitation numbers are based on the mandatory self-registration that

began July 1, 1994. Wilderness visitation remains concentrated at the trailheads accessed from US Highway 16**.**





Effectiveness Monitoring

Revised Standards and Guidelines affecting campsite conditions were monitored in 2000. The new guideline for amount of bare ground per campsite is providing useful trend information. The increase in the amount of bare ground per campsite over a four-year period is an indicator for increased concerns for the health and condition of resources in the Cloud Peak Wilderness.

Visitor compliance with mandatory self-issue registration is approximately 95%, and has improved the confidence level of use estimates for the wilderness. The reported Recreation Visitor Days (RVDs) for the Cloud Peak Wilderness is estimated to vary 10-15% from actual use with mandatory registration. The previous voluntary registration varied by at least twice as much as the mandatory system.

Validation Monitoring

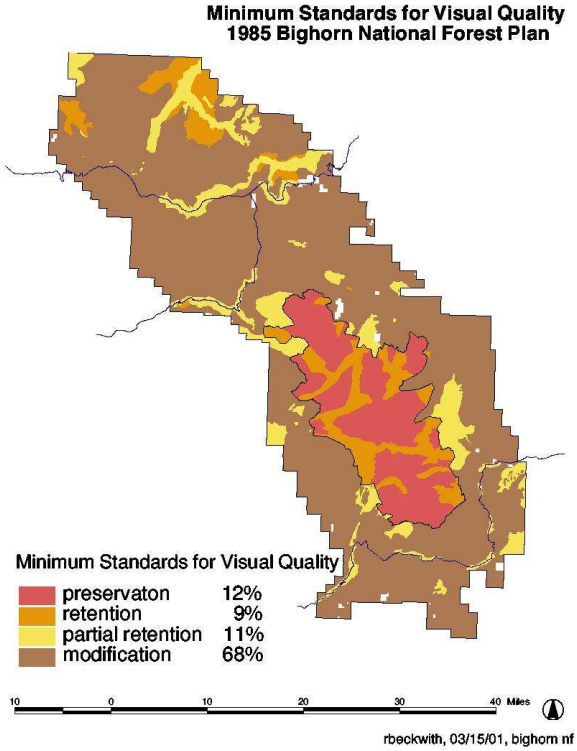
New Standards and Guidelines established by Forest Plan Amendment Fourteen (1998) have been implemented and will more effectively show trends in wilderness conditions.

VISUAL RESOURCE

PROGRAM SUMMARY

The visual resource of the Bighorn National Forest is managed as one consideration in the development, analysis, and execution of projects or activities on the Forest. Management or enhancement of the visual resource has not been identified as part of the purpose and need for any Forest project during the monitoring period (FY 2001).

A visual quality objective (VQO) inventory for the Forest was completed in 1979. Visual quality objectives describe the acceptable degree of alteration allowed in the natural landscape. The inventory mapped the relative importance of the visual resource in a particular place when compared to other Forest places.



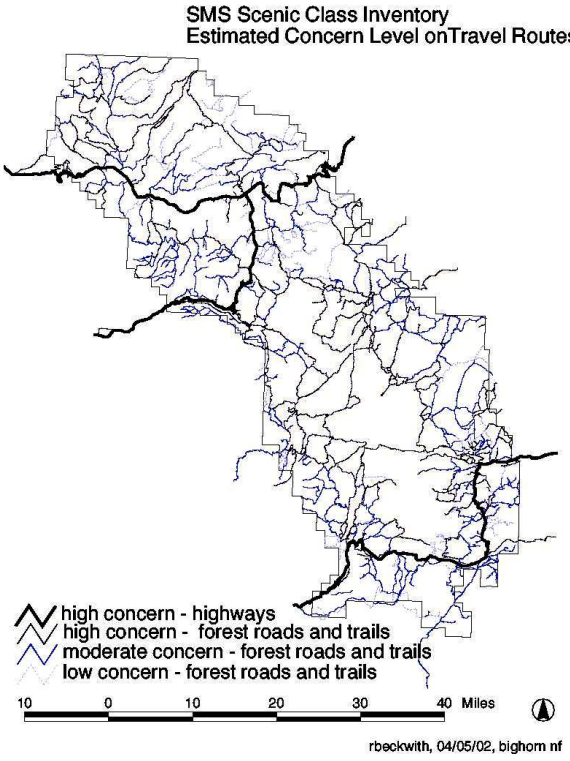
The map shows the minimum standards for visual quality established in the 1985 Forest Plan as amended. At one end of the scale, the preservation standard applies where ecological processes initiate most changes and management activities are not visible. At the other end of the scale, the modification standard permits management activities that dominate the natural landscape character, but borrow valued attributes of the larger landscape to create a compatible or complementary character. A minimum standard of modification applies to 82% of the general Forest area outside the Cloud Peak Wilderness.

MONITORING REQUIREMENT:
Compliance with Visual Quality Objectives

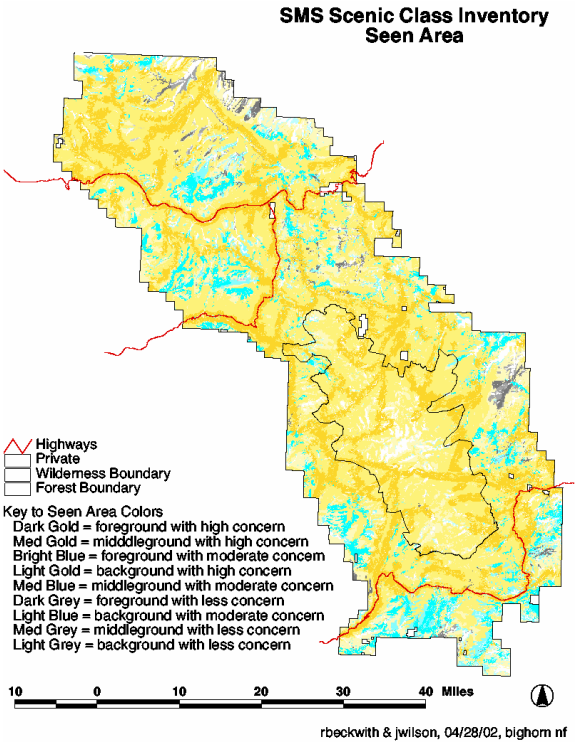
Monitoring of individual projects for compliance with the applicable standard for visual quality was suspended this year in favor of Forest-wide inventory and monitoring projects. Work is well underway on a Forest-wide inventory of scenic integrity. This will produce a map of the Forest's visual condition with a calendar year 2000 baseline. Scenic integrity is mapped on a scale ranging from areas unaltered by past management activities, to areas heavily altered by past activities. When it is complete, the map will be compared to the minimum standards in the 1985 Plan for an indication of compliance. The map will also be used as one baseline for the evaluation of alternatives in the Forest Plan revision currently being developed.

Validation Monitoring

The 1979 VQO inventory was used in development of the 1985 Plan. The scenery management system (SMS) inventory process was adopted nationally by the Forest Service in 1995. The Bighorn began work on an SMS inventory in 1999 and that work continued in 2001. The SMS system includes landscape character descriptions, the scenic integrity inventory described above, and the scenic class inventory. The scenic classes inventory is derived from a seen area map, based on topography and concern levels, and a scenic attractiveness map. These intermediate products have been completed.

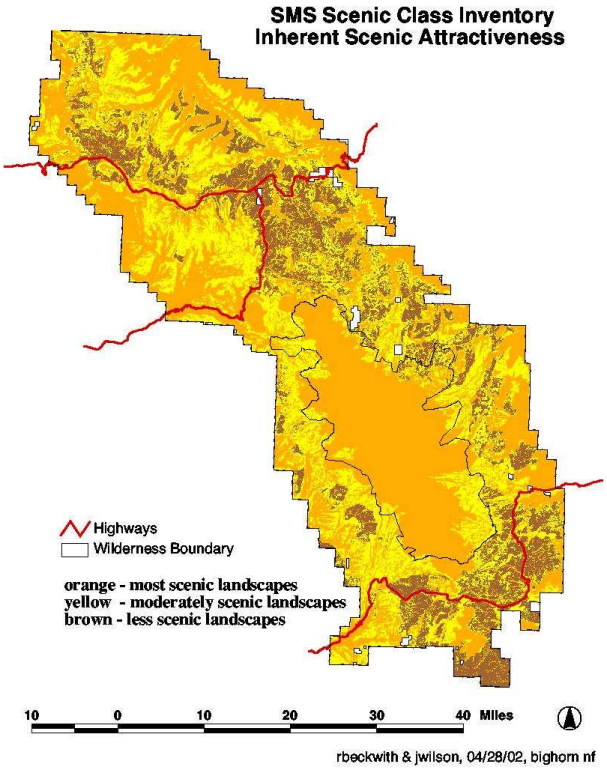


The map shows the concern levels assigned to travel routes on the Forest. Concern level estimates were made by Forest staff with extensive knowledge of the routes and the users on each District. High concern levels were assigned to routes with high traffic levels and/or routes with users that are very interested in scenery as part of their experience. Low concern levels were assigned in the reverse case.



The seen area analysis is based on the concern levels and the topography of the Forest. First viewpoints are identified along travel routes. Then a computer program compares the elevation of each viewpoint to the elevation of the topography surrounding it. The computer maps the seen area as foreground, middle-ground or background. It should be noted that the computer process cannot consider trees that screen topography from some viewpoints.

The composite seen areas map shown here is made up of data from many different viewpoints. The higher concern level and the nearer view have priority as maps are combined.



The map of inherent scenic attractiveness is based on physical features of the landscape. Landtype associations (geology), slope, water features, and riparian areas are the principle considerations. As the map to the left shows, the high country, canyons, and streamside zones tend to be the most attractive scenery.

The final step in the development of the scenic class map will be the combination of the seen area map and the scenic attractiveness map. That work is planned for 2002. The scenic class map will display the relative importance of particular areas of the Forest as scenery. It will be used in the Forest Plan revision process.

HERITAGE RESOURCES

PROGRAM SUMMARY

East Zone

Personnel on the east zone tested 10 sites in conjunction with the renewal of the Tongue Watershed ten-year term grazing permits. Other support work included analysis for the Forest Plan revision and the issuance of a contract for ethnographic studies.

Public education for the year included three flint knapping demonstrations and one historic photographic display. Personnel from the zone conducted several interpretive programs that took place at the Burgess Junction Visitor Center. Topics included the Sibley Battle, flint knapping demonstration, and a prehistoric technology workshop.

West Zone

In conjunction with the re-issuance of grazing permits, approximately 466 acres were surveyed for heritage resources during FY 2001. The nomination process (National Register of Historic Places) for the Medicine Wheel and Medicine Mountain continues.

Public education for the year included numerous informal talks and 2 formal lectures on the Medicine Wheel National Historic Landmark, as well as two school presentations.

MONITORING REQUIREMENT:
Professional Field Evaluation of Two Randomly Selected Projects (Forestwide)

East and west zone personnel examined no new projects for 2001. The Forest has not implemented any projects during 2001 that would meet the specified conditions.

MONITORING REQUIREMENT:
Sample Field Evaluation of Identified Cultural Resource Properties Requiring Protection (any Eligible or Unevaluated Site)

Ten prehistoric heritage resource properties, associated with grazing permit re-issuance, were evaluated for impacts and for their eligibility to the National Register of Historic Places on the Tongue District. Six of the sites were evaluated as eligible, and of the six, four were incurring impacts. The impacts to these sites are considered threatening to their eligible status. At present, mitigation plans are being designed to lessen the impacts. Implementation of mitigation measures is proposed to begin in 2002, and should be completed by 2006.

The Forest completed protection measures (new restroom facilities, hardened trails, and a new fence) for the Medicine Wheel National Historic Landmark. These actions reduce visual impacts and soil erosion at the site.

Effectiveness Monitoring

Two goals are associated with effective Forest Plan Monitoring: 1) *Identification of appropriate resource management,* and 2) *Initiate actions to reduce deficiencies*. In 2001, the Forest continued its concerted effort in meeting the objective of goal #1 through the grazing permit renewal process, early planning for wildlife and fire projects, and by the initiation and funding of the deferred maintenance program. We need to adhere to the monitoring requirement of evaluating two field projects annually.

The Forest has initiated several Programmatic Agreements (PA) in the past few years, and will complete a new PA this year for prescribed fire. These agreements state specific direction for management of heritage resources, thereby meeting goal #2 in reducing deficiencies in the program. The Forest already has standard procedures for reducing the effects of range and travel management activities. Additionally, we completed existing management plans on the Medicine Wheel National Historic Landmark, the Woodrock Tie-Hack Historical District, and are presently working on plans for historical administrative sites, recreational summer homes, as well as an ethnohistory/ethnographic study of indigenous occupants.

In support of the heritage resource database, the Regional Office continues to fund a data entry position for the purpose of inputting and managing Forest resource data records. Another boon to our heritage resource technology is the establishment of an agreement with the Wyoming Cultural Records Office to produce a Heritage GIS layer. The work should be completed in 2002. The new layer will serve as an effective tool in the planning, management and evaluation of heritage resources.

Validation Monitoring

Forest Plan goals and objectives in the 1985 Plan are lacking. Laws they were initially based upon have since been amended, and present direction in the Forest Plan is inadequate and/or inconsistent with the new amendments. For example, the Plan provides no direction for setting resource priorities for recreational needs. Also, monitoring requirements should be updated to include reporting the reduction in backlog of unevaluated sites. Recent direction from the Washington Office is helping to address these concerns. An assessment of resource heritage assets is being conducted for the purpose of reducing evaluation backlog, and establishing long-term monitoring goals that include annual maintenance priorities for sites that are incurring impacts. As noted above, the heritage resource database will be updated to reflect these activities, in order to monitor and analyze trends on the Forest.

Evaluation and Conclusions

The current Forest Plan needs to be revised to incorporate the significance of heritage resources into the Standards and Guidelines. With the addition of new Programmatic Agreements, new Forest policy, and improved funding orientation, the Forest can reach an acceptable level of heritage resource management within the next few years.

LANDS – SPECIAL USES

PROGRAM SUMMARY

The Lands and Special Uses Program on the Forest consists of real estate and boundary management including land acquisition and adjustments, withdrawals, public access, and the administration of a wide variety of special use authorizations, permits, leases, and easements.

We administer approximately 500 authorizations, including 150 non-recreation uses such as communication sites, municipal and agricultural reservoirs, pipelines, power lines, a fish hatchery, roads, and a variety of miscellaneous uses. In addition, the Forest permits approximately 375 recreation uses comprised of outfitter/guiding operations, recreation residences, three organization camps, ten resorts, two ski areas, numerous group use and recreation events, and a Forest-wide campground concession permit. With 265 summer home permits, the Bighorn has the most recreation residences in the Rocky Mountain Region.

In addition to the administration of existing permits, the Forest receives several new applications annually. Special Uses Staff reviewed and processed new authorizations for resorts, road easements, reservoir easements, and other uses. District Staff reviewed and processed special-use permits for outfitter-guides, recreation residences, group and recreation events, and temporary non-recreation uses.

Projects in FY 2001 and ongoing into FY 2002 have included the finalization of the Tie Hack Campground Withdrawal, meeting the Forest's landline target, resolving various trespass cases, including the resolution of one encroachment case under the Small Tracts Act. The Forest has also been working to identify and resolve public access issues when possible.

The Forest continued its moratorium on the issuance of any new outfitter-guide permits. This is an area of contention with various groups and individuals, but particularly with institutional users (colleges and universities). The moratorium remains in effect due to the lack of a current capacity analysis, and insufficient funding to staff for the administration of current permits.

MONITORING REQUIREMENT:
Ensure Compliance with Terms of Authorizations and Operating Plans

Inspection and compliance checks are performed to ensure compliance with permit requirements. However, many permitted uses are not inspected at the frequency mandated to ensure that the terms of the permit are being met. Staffing is such that only elements of health, safety, and environmental protection are administered to standard. Lack of Communication Site Plans make the administration of the Forest's Communication Sites difficult at best. Forest Service Directives state that updated Management Plans be prepared for all sites, but limited staffing has been prohibitive.

MONITORING REQUIREMENT:
Effects on Non-National Forest Land Management Practices on Adjacent or Intermingled National Forest System Lands or on Forest Goals and Objectives

Activities such as grazing, timber harvest, building and road construction, and recreation uses on adjoining and intermingled lands continue to increase. Public access to the Forest continues to be diminished due to private owners limiting access through private lands.

Effectiveness Monitoring

The Lands and and Special Uses Program complies with the limited direction found in the Forest Plan. Forest Service Manuals and Handbooks provide principal management policy and procedures. Limited funds resulting in understaffing make it impossible to adequately administer all permits to these established standards.

Validation Monitoring

An emphasis should be made to utilize a self-monitoring inspection system for all special uses, where a permittee reports compliance with permit standards on an annual basis. This approach has been used successfully on other Forests, and with some initial effort, would be a beneficial addition to our program.

FACILITIES

PROGRAM SUMMARY

The Forest Service infrastructure consists of those facilities required for the management of the National Forest. On the Bighorn National Forest there are approximately 1,567 miles of classified system road and 114 buildings, along with associated structures and utilities, which are utilized for resource management.

Funding for maintenance of the infrastructure has never been adequate. As such, priorities have to be set as to what work will be accomplished and what will be deferred. As budgets have declined, the amount of deferred work, or backlog, has increased dramatically. Adding to this is the fact that the majority of our roads and buildings are at or near the end of their design life, and in many cases a more substantial investment than routine maintenance will be required.

In 1998, the Forest Service determined that more information was needed to accurately identify our maintenance needs. An ambitious five-year inventory and reporting program was initiated to identify annual maintenance, deferred maintenance, and capital improvement needs for the entire infrastructure of the Forest Service. Through this initiative, every road, trail, building, campground, bridge, etc. will be reviewed for annual maintenance needs, deferred maintenance needs, and capital improvement needs over the next five years.

Fiscal year 2001 was the first year since the incorporation of the deferred maintenance condition survey program that the Bighorn National Forest was not required to perform condition surveys on existing roads. Condition surveys done in the past few years have revealed a trend in deferred and annual costs per mile for the majority of Forest roads, and this cost has been generalized and compared to actual surveyed costs and was found to be comparable. In 2002, the Forest will again be required to perform condition surveys, this time on 50% of all maintenance level 3, 4, and 5 roads (roads maintained for different levels of passenger vehicle travel).

In 2001, routine maintenance was performed on approximately 179 miles of level 1 road, 282 miles of level 2 road, 161 miles of level 3 road, and 90 miles of level 4 road - totaling 712 miles. Maintenance was performed by force account crews, contracts, and by permit holders according to the permit requirements, and cooperative agreement. No new roads were constructed, 5.7 miles were reconstructed, while 4.0 miles of road were decommissioned in 2001.

Maintenance increased significantly compared to previous years due to the addition of a field crew that focused on the task of performing level 1 road maintenance. The 2-person crew inventoried road lengths on level 1 and 2 roads, as well as unclassified roads. Level 1 road maintenance was performed in the form of cleaning and inspecting drainage features, as well as monitoring/inspection of roadbeds and cut and fill slopes. Where there was obvious distress on roads that required the use of heavy equipment, the

maintenance was noted and deferred until the force account crew was available. In 2002, the Forest is again planning on hiring this crew that will continue to concentrate on level 1 road maintenance and the inventory of level 1,2, and unclassified roads. The crew will also spend time replacing signs that are beyond their design life.

The Forest obtained a carry-over road grader from the Medicine Bow National Forest for use in the 2001 field season. Incorporating the use of the Forest's grader with the carry-over-grader proved to be a very efficient means for performing maintenance on level 3, 4, and 5 roads (roads maintained for different levels of passenger vehicle travel), as the two motor graders were used in tandem, and the number of passes required per road was greatly reduced. Late in the season, the Forest had difficulty finding a qualified operator to run the second blade. This reduced efficiency toward the end of the season, and precluded the maintenance crew from maintaining higher priority roads for a second time at the end of the summer (Tie Hack, West Tensleep, Big Goose, and Burgess Roads).

Inspections were performed on 45 administrative buildings and 34 recreation buildings during the 2001 fiscal year. These inspections were done in an attempt to find deferred maintenance items on these facilities, and to determine their annual maintenance costs. Routine maintenance and emergency repairs were performed on various buildings across the Forest. Technical support was also provided in the areas of special uses, interdisciplinary teams, accessibility, safety, and resource issues as required.

Construction, reconstruction, and maintenance projects are monitored to ensure compliance with applicable laws, regulations, plans and specifications. Coordination with specialists during project planning is accomplished to ensure health, safety, and resource protection measures are incorporated into the projects as required.

MONITORING REQUIREMENT:
Arterial, Collector and Local Road Construction and Reconstruction

Road construction and reconstruction Standards and Guidelines are met by utilizing design criteria developed through an interdisciplinary process and approved by the line officer.

Effectiveness Monitoring

During project implementation, monitoring is conducted through onsite inspections by qualified personnel. Deviations from the planned design are incorporated as necessary to account for a change in conditions or a plan oversight. Input from other specialists is sought as conditions warrant. Final acceptance of contracted projects by the appropriate authority is required.

Validation Monitoring

Personnel monitor construction projects as part of their routine duties. Changes in future design or modification of maintenance activities are incorporated as necessary to meet management objectives.

RECOMMENDATIONS

FACILITIES

1) Emphasis should be placed on maintaining the portions of existing infrastructure needed for long term Forest management.
2) The roads and buildings that are no longer needed or those that have inadequate funding to maintain them should be identified for disposal.
3) Maintenance responsibilities should be shifted to permittees and other users where appropriate.
4) A Capital Improvement Program should be developed to address the problems of worn out roads and obsolete buildings.
5) Infrastructure management tools such as databases, Geographic Information Systems, and Maintenance Management Systems should be incorporated into a unified system and kept current to aid in the ongoing evaluation and management of the Forest Service infrastructure.

FOREST VEGETATION

1) The Forest must emphasize the process of assuring adequate regeneration on regeneration treatments, including aspen regeneration and non-traditional treatments. Site-specific suitability for timber production of forested lands should be reviewed where treatment of woody vegetation is proposed, and adjustments made to the database as necessary and approved.
2) Update silviculture Standards and Guidelines to those listed in the Regional Guide for regeneration, size of created openings, size of uncut areas between created openings, when a created opening will no longer be considered an opening, guidelines that provide direction for the use of landscape level management, and guidance for applying silviculture systems to the landscape.
3) Emphasize the importance of requiring silvicultural prescriptions for all vegetative manipulation.
4) Include in the program budget adequate funding for TSI thinning and release, and reforestation both from sale area receipts and appropriated funds.
5) Maintain and validate the “needs” reporting in RMRIS for reforestation, release, and thinning. This can be a valuable tool to monitor the regeneration activities on the Forest, but it must be maintained to be effective.
6) Review the projected mortality volume estimates from the 1985 Forest Plan. Current output is 180% of projected amount. A determination should be made to see if by exceeding this output we are doing so at the detriment of other resource objectives, or if the projections were inaccurate.

7) Require that all quantifiable outputs be reported through the Forest database. This would ensure tracking of our accomplishments and accountability of their completion.

8) Standards and Guidelines need to be reviewed and Forest-wide interpretation documented, so they can be applied consistently and in consort with objectives, and outputs adjusted accordingly.

INSECTS AND DISEASE

1) It is recommended that the Forest, through the Forest Health Management Service Center in Rapid City, continue to schedule a Forest flight for pest activity every third year (the next flight should be scheduled for 2004). Further, it is recommended that the monitoring requirement currently in the Forest Plan be changed to reflect surveys every three years and spot surveys as needed, rather than the 800,000 acres each year.

2) The Forest should continue to monitor the mountain pine beetle, and work with affected communities and adjacent landowners. Because of limited access to infected federal lands, there may be few opportunities for preventative actions and salvage on the Bighorn National Forest.

3) If infection levels of white pine blister rust become unacceptable to forest managers, then suppression efforts could be used to reduce the disease incidence in these areas. Thinning limber pine stands to reduce susceptibility to mountain pine beetle (*Dendroctonus ponderosae*), and regeneration of limber pine stands may assist in reducing white pine blister rust infection. This may also help mitigate some of the harsh conditions of limber pine sites, promote tree growth, and improve resistance to white pine blister rust disease. In addition, the Forest should begin to collect seed from phenotypic resistant limber pine for storage in the seed bank and later restocking of affected sites.

4) It is further recommended that the Forest continue to work with the Rapid City Forest Health Management Center in monitoring to determine the extent of known populations of insects and diseases of the Forest.

HERITAGE RESOURCES

1) The Forest Plan needs to be amended to address changes necessary in the management of the heritage resource. More specific statements in the "General Direction" and "Standards and Guidelines" sections of the Plan relating to existing laws and procedures need to be included. The Forest Plan should reflect a 1988 Amendment to the Archaeological Resource Protection Act, Section 14(b) that requires the preparation of a schedule for surveying lands that are likely to contain resources of archeological significance.

2) The Forest Plan needs to ensure that aerial spraying to control pests and noxious weeds not be conducted without protective measures in areas containing petroglyphs and pictographs, or in un-inventoried areas containing rock outcrops,

cliff faces, or rock overhangs. Recent advances in analytical techniques allow for the dating of petroglyphs and pictographs through sensitive chemical ratios.

3) The Forest, through planning and budgeting, needs to develop a Heritage Resource Program that goes beyond meeting compliance standards. Protection of our Heritage Resources for future study and enjoyment by the public is necessary.

4) The Forest should consider incorporating a paleontological resource management program.

5) The Forest should enter into an agreement with the Wyoming State Historic Preservation Office that deals with the acceptance of impacts to all but the best examples of resource types (e.g., the best tie-hack cabins; the best teepee ring sites). The end result of the agreement would be a reduction in costs.

6) The Forest Plan emphasizes the management of Heritage Resources in relationship to Section 106, of the National Historic Preservation Act. The Forest Plan needs to incorporate direction to cover all pertinent laws, such as Native American Graves and Repatriation Act, and Preservation of Historical and Archeological Data, as well as other federal direction that carries the weight of law, such as Executive Order 13007.

LANDS – SPECIAL USES

1) The Forest should continue to pursue shared duties with neighboring administrative units, in order to improve the effectiveness of its Lands and Special Uses program through a teamwork approach.

RECREATION

1) Ensure that mitigation measures are carried out during project implementation.

2) Adjust and clarify both capacity figures and ROS guidelines in the Forest Plan.

3) Initiate an intensive education and law enforcement program of off-road vehicle use and dispersed camping. Consider the elimination of off-road vehicle areas ("C" areas on our Forest maps).

4) Develop strategies for collecting reliable recreation use statistics and in defining recreation resource assets.

5) Secure more staff time and outside Forest/Agency involvement in monitoring.

6) Recognize that personal perceptions, needs, and values are a part of ecosystem management.

7) Apply land management prescriptions to larger blocks of land in future planning.

8) Ensure adequate funding for trail maintenance and other Forest recreation programs.

9) Place more emphasis on development of partnerships and the use of volunteers to accomplish objectives.

SOIL AND WATER

1) Ensure that all aspects of project decisions are identified and funded through the annual budget process. This should include monitoring activities for the soil and water resources. Periodic project reviews should be conducted to ensure NEPA decisions are being implemented in whole.
2) Continue to establish Best Management Practices during project design and then assure they are properly implemented and maintained.
3) Emphasize soil and water protection measures during project design and implementation. Ensure that monitoring of projection measures is conducted on a regular basis.
4) Increase emphasis on monitoring of special use permits related to water conveyance systems, septic systems, and instream flows.
5) Conduct landscape scale analyses in order to assess the existing conditions within large watersheds on the Forest.

WILDLIFE

1) Incorporate new Rocky Mountain Region (Region 2) Sensitive Species into project planning and analysis.
2) Incorporate updated Management Indicator Species (MIS) list into the 1985 Forest Plan and revision efforts.

IDENTIFIED RESEARCH NEEDS

HERITAGE RESOURCES

The Forest contains approximately 340 unevaluated heritage resources properties. Because of legal requirements, these properties must be managed as though they are eligible to the National Register of Historic Places. Research is needed to determine proper NRHP status; the findings could result in reduced long-term management costs, as several sites would be identified as non-eligible, and the Forest would no long be obligated to manage them. Due to a recent agreement with the University of Montana, direction from the Forest Service Office in Washington (i.e., deferred maintenance assessments), and recent PA's (Range), the Forest is taking steps to achieve numerous goals in the heritage resource program. However, it will be a few more years before the full effects of these actions can be measured.

REFERENCES

Brown, D.H. 1978. The status of white pine blister rust on limber pine and whitebark pine in Wyoming. Gen. Tech. Rep. R2-13. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station.

Harris J.L. 1999. White pine blister rust disease of limber pine in the Bighorn and Medicine Bow National Forest. Biological Evaluation R2-00-02. USDA Forest Service, Region 2 Forest Health Management. Unpublished.

Hoff, R., Bingham, R.T., and G.I. McDonald. 1980. Relative blister rust resistance of white pines. European Journal of Forest Pathology, 10: 307-316.

Kendall, K.C. and D. Schirokauer. 1997. Alien threats and restoration dilemmas in whitebark and limber pine communities. Pages 218-225 *in* Proceedings of the 9th conference on research and resource management in parks and on public lands. Albuquerque, New Mexico.

McMillin, J. and K. Allen. 1999. Forest health management bark beetle sampling. (RCSC_00_). USDA Forest Service, Region 2 Forest Health Management, unpublished.

LIST OF CONTRIBUTORS

The following are members of the Team that participated in the monitoring and preparation of this report:

Kari Allanson – Wildlife Biologist (West Zone)

- B.S. Wildlife Management from the University of Wisconsin, Stevens Point (1991).
- Eleven years of experience with the Forest Service on the Fremont, Wenatchee, Medicine Bow-Routt, and Bighorn National Forests; 1 year of experience with the Idaho Fish and Game Department.

Julie Baker – Powder River District Special Uses/Wilderness Technician

- B.S. Recreation and Park Administration.
- Fourteen years of experience with the Forest Service on the Medicine Bow, Black Hills, Bighorn, and Chugach National Forests.

Kolleen Bean – Archeologist (West Zone)

- B.A. Business Administration from Michigan State University; B.S. Anthropology from Michigan State University; M.A. Anthropology from University of Buffalo, New York; Ph.D. Anthropology from University of Buffalo, New York.
- Eleven years of experience with the Forest Service on the Gila, Payette, and Bighorn National Forests. Seven years of university archeology experience.

David Beard – Tongue District Rangeland Management Specialist

- B.S. Agricultural Production, Range Science Option.
- Twenty-one years experience with the Forest Service including work on the Custer National Forest, Montana; Pike/San Isabel National Forest, Colorado; Nebraska National Forest, South Dakota; and the Bighorn National Forest, Wyoming.

Ruth Beckwith – Landscape Architect

- B.L.A. from Kansas State University (1979).
- Twenty-four years of experience with the Forest Service on the Pike-San Isabel, Rio Grande, White River, and Bighorn National Forests; Licensed Landscape Architect.

Beth Bischoff – Medicine Wheel/Paintrock Rangeland Management Specialist

- B.S. Range Management , Range and Wildlife Option
- Fourteen years experience on the Bighorn National Forest.

Bryce Bohn – Forest Hydrologist and Aquatic Hydrologist

- B.S. Forest Hydrology from the University of Montana (1990); M.S. Fisheries and Fish Habitat Relationships from Utah State University (1998).
- Nine years experience with the Forest Service on the Kootenai National Forest in northwest Montana. Began as Forest Hydrologist on the Bighorn National Forest in November 1998.

Bernie Bornong – Forester

- B.S. in Forestry from Iowa State University (1981).
- Nineteen years experience with Forest Service on the Idaho Panhandle, Gila, Black Hills, and Bighorn National Forests.

Craig Cope – Powder River District Recreation/Wilderness/Lands Staff

- B.S. Forestry from Pennsylvania State University.
- Twenty-four years of experience with the Forest Service on the Ashley, White River, Black Hills and Bighorn National Forests.

Phil Fessler – Civil Engineer

- B.S. Civil Engineering, South Dakota School of Mines and Technology.
- Ten years experience with the Forest Service on the Shoshone and Bighorn National Forests.

R. Scott Gall – Powder River District Rangeland Management Specialist

- B.S. in Natural Resource Management, Wildlife Management and Range Management Options.
- Range Conservationist, USDA Soil Conservation Service, Mullen Nebraska and Rushville Nebraska Field Offices: (1982 to 1988). Range Conservationist, Medicine Wheel Ranger District, Bighorn National Forest: (1988 to 1993). Rangeland Management Specialist, Powder River Ranger District, Bighorn National Forest: May 1993 to present.

Harold Golden – Wildlife Biologist (East Zone)

- B.S. in Wildlife Biology from Colorado State University.
- Twenty-three years experience with the Forest Service.

Glenn Hare – Trails Center of Excellence (Forester)

- B.S. Forest Science.
- Thirty-one years experience with the Forest Service, including Project Crew Leader on the R-2 Timber Inventory Team; Recreational Forester on the Routt National Forest in Colorado; and Head Snow Ranger on the Chugach National Forest in Alaska.

Gayle Laurent – Realty Specialist

- Twenty-four years experience with the Forest Service on the Los Padres and Bighorn National Forests.

Rick Laurent – Archaeologist

- B.A. Anthropology and M.A in American Studies from the University of Wyoming.
- Seventeen years experience with the Forest Service on the Medicine Bow, Routt, and Bighorn National Forests. Two years of archaeological experience with the University of Wyoming and four years with private contractors.

David Mandrella – Fisheries Biologist

- B.S. Fisheries Ecology
- Twenty-five years experience with the Forest Service on the Hiawatha, Ottawa and Bighorn National Forests. Three years experience in Great Lakes Research with U.S. Fish and Wildlife Service.

Dave Morris – Medicine Wheel/Paintrock Rangeland Management Specialist

- B.S. Wildlife Management.
- Twenty-eight years of experience with the Forest Service on the Black Hills National Forest, Bearlodge Ranger District; Rocky Mountain Forest and Range Experiment Station, Laramie; Grand Mesa, Uncompahgre, and Gunnison National Forest, Collbran Ranger District; Bighorn National Forest, Paintrock Ranger District.

Mike Scanlon – Data Base Manager

- B.S. Forest Management; M.S. Forestry Economics and Marketing.
- Fourteen years experience with the Forest Service on the Clearwater; Fremont, Willamette, and Bighorn National Forests.

Ron Stellingwerf – Resource Staff Officer

- B.S. Forestry, Range Option.
- Thirty-one years experience in the Forest Service including work on the Nez Perce, Custer, Beaverhead, and Bighorn National Forests.

Joel Strong - Recreation Staff Officer (Forester)

- A.S. Forest Technology; B.S. Forest Science; M.S. Forest Resources (Recreation Management).
- Twenty-five years of experience with the Forest Service including work on the White Mountain National Forest in New Hampshire; Routt National Forest in Colorado; San Bernardino National Forest in California; the Tongass National Forest (Stikine Area) in Alaska; and the Northeast Forest Experiment Station in Kentucky.

Christopher Thomas – Forest Silviculturalist

- B.S. Forestry from Michigan Technological University (1979).
- Certified Silviculturist since 1989, Certified Forester since 1997.
- Experience on the Ottawa, Rio Grande, Black Hills and Bighorn National Forests since 1980. Providing silvicultural input and evaluation of vegetative treatments.

Jon Warder – Forest Wildlife Biologist

- B.S. Natural Resource Management, with minor in Wildlife from Colorado State University (1991).
- Eleven years experience with the Forest Service on the Black Hills, Humboldt-Toiyabe, and Uinta National Forests.

APPENDIX A

Forage Utilization – District Reports

Utilization standards vary between uplands and riparian vegetation. Upland standards allow for an average of 50% utilization of grasses under a rotational grazing system. Average utilization under season-long grazing is 36-45% on ranges in good condition. Use would be less on poorer condition ranges.

Based on current standards, maintaining a 4" stubble height for sedges prior to August 1 and 6" after August 1 provides for healthy and productive riparian vegetation.

Willow standards allow for 50% utilization, with 30% for livestock and 20% for wildlife.

Different standards can be implemented on the ground and are noted in the table. Pastures exceeding standard will have management adjustments made the following year to allow the vegetation to recover.

When the 1985 Forest Plan vegetation management guidelines were implemented, they required mandatory permittee monitoring. The Bighorn National Forest was the only Forest in the nation with this requirement. It was determined that more accurate data would be submitted on a voluntary basis, and in the fall of 2001, the mandatory permittee monitoring requirement was lifted. Voluntary permittee monitoring will be in effect beginning with the 2002 grazing season.

The following tables are the individual District reports for forage utilization in upland, riparian, and aspen range sites. **Blank fields indicate permittee has not submitted data, or utilization has not been analyzed.**

Medicine Wheel/Paintrock Ranger District

Upland Utilization

Utilization refers to the range of utilization levels that occurred within a given pasture in the upland sites

Allotment	Pasture	Veg Type	Method Used	Utilization (%)
Granite Creek	Middle	Feid-Artr	Ocular/Ht-Wt	20-60
Granite Creek	Upper	Feid-Artr	Ocular/Ht-Wt	20-60
Granite Creek	Lower	Feid-Artr	Ocular	20-50
Granite Creek	Tomb	Feid-Artr	Ocular/Ht-Wt	20-60
Salt Creek	East Willet	Feid-Dain	Ocular	20-80
Salt Creek	Big Spring	Feid-Artr	Ocular	70+
Salt Creek	Ski Area	Slx-Deca	Ocular	40-60
Salt Creek	Salt Creek	Feid-Artr	Ocular	40-60
Salt Creek	Lower Cabin	Feid-Artr	Ocular	40-60
Salt Creek	Upper Beef	Feid-Artr	Ocular	40-50
Salt Creek	Lower Beef	Feid-Artr	Ocular	40-60
Shell Creek	Lower Shell	Feid-Artr	Ocular	40-70+
Shell Creek	Antelope Butte	Feid-Artr	Ocular	40-50
Crooked Creek	Crooked Creek	Feid-Artr	Ocular	35-40
Trapper Creek	Mill Creek	Feid-Artr	Ocular	60+
Trapper Creek	Black Butte	Feid-Artr	Ocular	45-60+
Medicine Ldg	Lower	Feid-Dain	Ocular	30
Medicine Ldg	North High	Feid-Carex		
Medicine Ldg	Lakes of Rough	Des-Car	Ocular	0

Allotment	Pasture	Veg Type	Method Used	Utilization (%)
Forks	Lower Cold Sp	Feid-Artr	Ocular	45-55
Forks	Upper Cold Sp	Feid-Artr	Ocular	45-60+
Forks	Lower Cold Sp	Aspen	Ocular	35-45
Forks	Anthony Park	Feid-Dain	Ocular	40
Paintrock Basin	North High	Feid-Dain	Ocular	30-40
Paintrock Basin	Willow Swamp	Aspen-Poa	Ocular	10
Paintrock Basin	East Cement	Feid-Artr	Ocular	40-50
Paintrock Basin	Toe of Cement	Feid-Artr	Ocular	40
Paintrock Basin	West Bench	Poa-Bro	Ocular	40-60
Paintrock Basin	S. High Park	Feid-Artr	Ocular	30-50
Paintrock Basin	Lower Woodchuck	Poa-Artr	Ocular	50-60
Paintrock Basin	Upper Woodchuck	Feid-Artr	Ocular	30-60
Paintrock Basin	Battle Park	Feid-Dain	Ocular	40-45
Paintrock Basin	Long Park Ck.	Aspen-Poa	Ocular	40-50
Shell Basin	Buckley Creek	Carex-Slx	Ocular	50-65
Sunlight Mesa	Cottonwood	Artr-Feid	Ocular	
Sunlight Mesa	Torry Gulch	Feid-Dain-Artr	Ht/Wt/Photo	
Sunlight Mesa	Torry Gulch	Feid-Dain-Artr	Ht/Wt/Photo	
Sunlight Mesa	Deer Springs	Feid	Ht/Wt	
Wiley Sundown	Wiley Sundown	Dain-Feid	Ocular	20-70
Wiley Sundown	Wiley Sundown	Dain-Feid		
Finger Creek	Finger Creek	Artr-Feid	Ocular	

Allotment	Pasture	Veg Type	Method Used	Utilization (%)
Wallrock-Hidden Tepee	East Tepee	Feid-Dain	Ocular	
Wallrock-Hidden Tepee	West Tepee	Feid-Dain	Ocular	
Wallrock-Hidden Tepee	West Fork	Artr-Feid	Ocular	
Pole Creek	Ice Creek	Dain-Feid	Ocular	
Pole Creek	Middle	Dain-Feid	Ocular	
Pole Creek	Tongue	Dain-Feid	Ocular	
Pole Creek	Hunt Mtn.	Dain-Feid	Ocular	
Little Horn	East	Artr-Feid	Ocular	
Medicine Mtn.	Lower Porcupine	Artr-Feid	Ocular	
Medicine Mtn.	Upper Porcupine	Artr-Feid	Ocular	20-60
Medicine Mtn.	South Medicine	Artr-Feid	Ocular	20-50
Medicine Mtn.	Five Springs	Artr-Feid	Ocular	
Little Horn	Trail	Artr-Feid	Ocular	
Little Horn	Willow	Artr-Feid	Ocular	
Little Horn	Wagon Box	Artr-Feid	Ocular	30-35
Devil's Canyon	Cookstove	Artr-Feid	Ocular	
Devil's Canyon	Bucking Mule/TP	Artr-Feid	Ocular	
Devil's Canyon	Lodge Grass	Artr-Feid	Ocular	20-60
Devil's Canyon	Res. Hole	Artr-Feid	Ocular	
Whaley Creek	East Bald	Feid-Dain	Ocular	

Riparian and Aspen Utilization. Stubble height is the height of forage remaining after grazing. Aspen and willow browse transects monitor the percent of current growth removed by livestock/wildlife or wildlife alone.

Allotment	Pasture	WL/Cattle	Veg Type	Method Used	Stan-dard	%Use or Resid-ual Ht.
Granite	Middle	Cattle	Carex	Stubble Ht	7”	6”
Shell Creek	Antelope Basin	Cattle	Carex	Ocular	Trend	Up
Shell Creek	Upper Shell	Cattle	Carex	Ocular	5”	5+”
Shell Basin	Buckley Ck	Cattle	Carex	Ocular	7”	4”
Shell Basin	Buckley Ck	Cattle/WL	Willow	Marked twig	30%	
Shell Basin	Buckley Ck	Wildlife	Willow	Marked twig	30%	
Crooked Ck	Johnny Ck	Cattle	Carex	Stubble Ht.	7”	6”
Crooked Ck	Jack Creek	Cattle	Carex	Stubble Ht.	7”	7+”
Crooked Ck	Crooked Ck	Cattle	Carex	Stubble Ht.	7”	3-6+”
Salt Creek	Big Spring	Cattle	Carex	Stubble Ht.	7”	4”
Paintrock	Toe Cement #1	Cattle/WL	Aspen	Marked twig	10%	
Paintrock	Toe Cement #1	Wildlife	Aspen	Marked twig	10%	
Paintrock	Toe Cement #2	Cattle/WL	Aspen	Marked twig	10%	
Paintrock	Toe Cement #2	Wildlife	Aspen	Marked twig	10%	
Paintrock	East Cement	Cattle/WL	Aspen	Marked twig	10%	
Paintrock	East Cement	Wildlife	Aspen	Marked twig	10%	
Paintrock	Will. Swamp#1	Cattle/WL	Willow	Marked twig	10%	
Paintrock	Will. Swamp#1	Wildlife	Willow	Marked twig	10%	
Paintrock	Will. Swamp#2	Cattle/WL	Willow	Marked twig	10%	

Allotment	Pasture	WL/Cattle	Veg Type	Method Used	Stan-dard	%Use or Resid-ual Ht.
Paintrock	Will. Swamp#2	Wildlife	Willow	Marked twig	10%	
Paintrock	Sheep Ck#1	Wildlife	Willow	Marked twig	10%	
Paintrock	Sheep Creek#1	Cattle/WL	Willow	Marked twig	10%	
Paintrock	Sheep Ck#2 [1]	Wildlife	Willow	Marked twig	10%	
Paintrock	Sheep Ck#2	Cattle/WL	Willow	Marked twig	10%	
Paintrock	Sheep Ck#3	Wildlife	Willow	Marked twig	10%	
Paintrock	Sheep Ck#3	Cattle/WL	Willow	Marked twig	10%	
Medicine Ldg	Medicine Lodge	Cattle/WL	Carex	Ocular	7”	8+”
Medicine Ldg	Medicine Lodge	Cattle/WL	Willow	Height/Photo	Trend	Static
Trapper Ck	Mill Creek	Cattle	Carex	Ocular	7”	4”
Forks	Medicine Lodge	Cattle	Aspen	Ocular	4”	2+”
Forks	Meadow Creek	Cattle	Carex	Ocular	7”	6+”
Forks	Anthony Park	Cattle	Carex	Ocular	5”	8+”
Sunlite Mesa	Deer Springs	Cattle	Under Aspen	Stubble Ht.	4”	6.1”
Medicine Mtn	S. Medicine T3	Cattle	Carex	Stubble Ht.	5”	8.7”
Medicine Mtn	Runaway T4	Cattle	Carex	Stubble Ht.	5”	6.6”
Medicine Mtn	South14A T6	Cattle	Carex	Stubble Ht.	5”	9.2”
Medicine Mtn	S Sawmill T10	Cattle	Carex	Stubble Ht.	7”	10.4”
Medicine Mtn	DuncomCr T14	Cattle	Carex	Stubble Ht.	7”	11”
Medicine Mtn	PorcyTr Swamp	Cattle	Carex	Stubble Ht.	7”	6”
Medicine Mtn	PorcyTr SBare	Cattle	Carex	Stubble Ht.	7”	5.8”

Allotment	Pasture	WL/Cattle	Veg Type	Method Used	Stan-dard	%Use or Resid-ual Ht.
Medicine Mtn	Porcy Trib	Cattle	Carex	Stubble Ht.		
Whaley Ck	Whaley Creek	Sheep	Carex	Stubble Ht.	5”	
Whaley Ck	East Bald	Sheep	Carex	Stubble Ht.	7”	7+”
Little Horn S&G	East Little Horn	Sheep	Carex	Stubble Ht.	6”	
Little Horn C&H	Willow T1	Cattle	Aspen	Stubble Ht.	4”	6”
Little Horn C&H	Willow T2	Cattle	Rip	Stubble Ht.	4”	6.6”
Little Horn C&H	Willow T3	Cattle	Aspen	Stubble Ht.	4”	9.9”
Little Horn C&H	Willow T4	Cattle	Aspen	Stubble Ht.	4”	11.2”
Little Horn C&H	Willow T5	Cattle	Rip	Stubble Ht.	4”	6.4”
Little Horn C&H	Willow T6	Cattle	Rip	Stubble Ht.	6”	6.3”
Little Horn C&H	Wagon Box	Cattle	Carex	Stubble Ht.	6”	
Little Horn C&H	Wagon Box	Cattle	Carex	Stubble Ht.	6”	
Little Horn C&H	Wagon Box T2	Cattle	Rip	Stubble Ht.	6”	8”
Little Horn C&H	Wagon Box T4	Cattle	Carex	Stubble Ht.	6”	5.1”
Little Horn C&H	Trail-Kerns Flat	Cattle	Carex	Stubble Ht.	5”	
Little Horn C&H	Trail-Quaking Aspen Coulee	Cattle	Carex	Stubble Ht.	5”	
Little Horn C&H	Trail #4 Coulee	Cattle	Carex	Stubble Ht.	7”	7.7”
Little Horn C&H	Trail-Clay Bank	Cattle	Carex	Stubble Ht.	7”	13.5”
Little Horn C&H	Trail	Cattle	Carex	Stubble Ht.	7”	13.4”
Little Horn C&H	Horse	Cattle	Carex	Stubble Ht.	7”	6.6”

Allotment	Pasture	WL/Cattle	Veg Type	Method Used	Stan-dard	%Use or Resid-ual Ht.
Little Horn C&H	Horse	Cattle	Carex	Stubble Ht.		
Little Horn C&H	West Burnt	Cattle	Carex	Stubble Ht.	7”	10.7”
Little Horn C&H	West Burnt	Cattle	Carex	Stubble Ht.	7”	9.4”
Sage Basin	Below Camp	Cattle	Grass	Stubble Ht Under Aspen	4”	4.7”
Devil’s Canyon	Cookstove T1	Cattle	Carex	Stubble Ht.	6”	6.4”
Devil’s Canyon	Cookstove T2	Cattle	Carex	Stubble Ht.	6”	7.5”
Devil’s Canyon	Cookstove T3	Cattle	Carex	Stubble Ht.	6”	7.1”
Devil’s Canyon	Cookstove T4	Cattle	Carex	Stubble Ht.	6”	6.9”
Devil’s Canyon	Big TP T1	Cattle	Carex	Stubble Ht.	6”	10.2”
Devil’s Canyon	Big TP T2	Cattle	Carex	Stubble Ht.	6”	8.5”
Devil’s Canyon	Main Fork B Mule T3	Cattle	Carex	Stubble Ht.	6”	7.6”
Devil’s Canyon	North Fork B Mule T4	Cattle	Carex	Stubble Ht.	6”	8.2”
Devil’s Canyon	Main Fork B Mule T5	Cattle	Carex	Stubble Ht.	6”	6.9”
Devil’s Canyon	Reservation Hole	Cattle	Carex	Stubble Ht.	6”	5.7”
Devil’s Canyon	Lodge Grass (Gunstock)	Cattle	Carex	Stubble Ht.	6”	5.2”
Devil’s Canyon	Lodge Grass (above Kerns)	Cattle	Carex	Stubble Ht.	6”	5.9”
Devil’s Canyon	Lodge Grass (Crater Lake)	Cattle	Carex	Stubble Ht.		
WY Gulch	L Horn Meadow	Cattle	Carex	Stubble Ht.	7”	
WY Gulch	½ Ounce	Cattle	Carex	Stubble Ht.	7”	
WY Gulch	Gold Ck E of Ex	Cattle	Carex	Stubble Ht.	7”	10.3:”

Allotment	Pasture	WL/Cattle	Veg Type	Method Used	Stan-dard	%Use or Resid-ual Ht.
WY Gulch	Gold Ck	Cattle	Carex	Stubble Ht.	7”	7.7”
WY Gulch	G&F Cabin FS	Cattle	Carex	Stubble Ht.	7”	5.8”
WY Gulch	G&F Cabin Permittee	Cattle	Carex	Stubble Ht.	7”	9.9”
WY Gulch	Bald Mtn Ck	Cattle	Carex	Stubble Ht.	7”	13”
WY Gulch	T1 Meadows	Cattle	Carex	Stubble Ht.	7”	8.3”
WY Gulch	WY Gulch Ck T1	Cattle	Carex	Stubble Ht.	7”	8.6”
WY Gulch	WY Gulch Ck T2	Cattle	Carex	Stubble Ht.	7”	9.7”

Tongue Ranger District

Upland Utilization

Allotment	Location/ Pasture	Monitored By	Vegetation Type	Method	Utilization (in/%)
Amsden					
Copper Ck/Up Dry Fk	Upper Dry Fork	FS	Upland	Ocular	20-30%
	Upper Dry Fork Horse	FS	Upland	Ocular	50-60%
	Copper Cr Copper/Dry Ovens	FS	Upland	Ocular	50-60%Poa 30-50%other 60-70+%
Fishhook/Fool Creek					
Freezeout East	South Horse Cr east	FS	Upland	Ocular	50% timothy 60% other
Freezeout East	Ridge River SE Corner Rx burn areas	FS	Upland	Ocular	70+% 60%
Freezeout West	Schuler Park				

Allotment	Location/ Pasture	Monitored By	Vegetation Type	Method	Utilization (in/%)
Freezeout West	Hay Creek Hay Cr basin Basin south #3 Dayton Gulch	FS	Upland	Ocular	50-70% 50-60+% moderate mod-heavy
Lake Creek	Lake Creek	FS	Upland	Ocular	Mod-heavy
	Lick Creek south FDR15	FS	Upland	Ocular	Moderate 60+% 40-60% 50-60%
	NTongue CG	FS	Upland	Ocular	Light-mod
Lower Tongue East	S Bear Ldg Little Willow Big Willow	FS	Upland	Ocular	35-40% 45-55%
	Sheeley Creek	FS/permittee	Upland	Ocular	40-45% S end 50-55% N end
	N Bear Ldg Big Willow Little Willow	FS/permittee	Upland	Ocular	40-50% 50-60+%
	Little Willow Rx Burn east	FS	Upland	Ocular	40-60% 50-60%
	Schuler Park Schuler Park Dry Prong	FS	Upland	Ocular	50%upper ½ 60-70% lower 60-70%
	Dry Fork	FS	Upland	Ocular	60%Artrslope 50-60%ridgeN 50-60%ridge S
	Sheep Creek Middle Fork East Fork Lower	FS	Upland	Ocular	45-50% 60+% 60+%
Lower Tongue Experimental	N Special Use North Exp North Exp PKSpecialUse	FS	Upland	Various	74% 74% 45% Feid only 50%
Lower Tongue West	Garden Gods Dry Gulch	FS/permittee	Various	Ocular	60+% 60% 50-60% 30% Feid only
	Big Willow	FS/permittee	Upland	Ocular	50-55%

Allotment	Location/ Pasture	Monitored By	Vegetation Type	Method	Utilization (in/%)
Lower Tongue West	Bull Creek ccamp/fish ex eslopes below eslopes above	FS	Upland	Ocular	60+% 50-60% 60+%
Nicklemine	Nickle Bars Hill SW corner	FS	Upland	Ocular	60+% 60-70%
	River North Tongue	FS	Upland	Ocular	40-60%
	Highway Marcum Cr	FS	Upland	Ocular	65-70%
	South Marcum Cr	FS	Upland	Ocular	70+%
	West Brush Marcum Cr	FS	Upland Twin Buttes wside below below corral	Ocular	45-60% 60+% 45-60%
Pass Creek	Back Country Five Springs	FS	Upland	Ocular	50+%
Prospect/Cedar					
Upper Tongue	Below Tubes NTongue	FS	Upland	Clipped	62%
	Above Tubes NTongue	FS	Upland	Ocular	45-55%
	S Wallrock NTongue	FS	Upland	Ocular	30-60%
	Spring South NTongue	FS	Upland	Ocular	40-60%
Walker Prairie	South Prairie Walker Cr benches Buck Cr	FS	Upland	Ocular	60% 60+% 50-70%
	North Prairie SE corner Quartz Cr	FS	Upland	Ocular	50-70% 50-60%
	Alden Roosevlt Trail	Photos/public	Upland	Ocular	60+%
Wolf Creek	Star Fish (Sibley Creek)	FS	Upland Wolf Cr trl NWolf trail aspen Star S slopes	Ocular	60+% 40-60% 50-60% 40-60+%

Allotment	Location/ Pasture	Monitored By	Vegetation Type	Method	Utilization (in/%)
Wolf Creek	Big Bend (Bear Creek)	FS	Upland	Ocular	60+%
	The Jaws	FS	Upland	Ocular	60-70%

Willow Transects

The following table displays the percent of the current year's plant growth removed by wildlife and livestock. Transects identified as wildlife/cattle show the percentage of marked twigs browsed during the time period livestock were in the pasture. Transects identified as wildlife show the percentage of marked twigs browsed during the time period when livestock were not in the pasture.

Allotment	Pasture or Area	Wildlife/Cattle	Marked Twig	Period Monitored	Percent Use
Copper Creek	Copper Creek	Wildlife	Marked Twig	9/13/00 - 07/06/01	62
Copper Creek	Copper Creek	Wildlife	Marked Twig	07/06/01 - 07/25/01	26
Copper Creek	Copper Creek	Wildlife	Marked Twig	07/25/01 - 10/09/01	70
Copper Creek	South Tongue	Wildlife	Marked Twig	09/13/00 - 07/06/01	44
Copper Creek	South Tongue	Wildlife	Marked Twig	07/06/01 - 07/25/01	9
Copper Creek	South Tongue	WL/Cattle	Marked Twig	07/25/01 10/10/01	41
Lower Tongue	Little Willow	WL/Cattle	Marked Twig	08/01/01 - 08/29/01	97
Lower Tongue	Little Willow	Wildlife	Marked Twig	07/05/01 – 08/01/01	3
Lower Tongue	Sheeley Creek	Wildlife	Marked Twig	09/05/00 – 07/05/01	32
Lower Tongue	Sheeley Creek	Wildlife	Marked Twig	07/05/01 – 07/16/01	0
Lower Tongue	Sheeley Creek	WL/Cattle	Marked Twig	07/16/01 – 08/01/01	15
Lower Tongue	East Experimental	Wildlife	Marked Twig	07/11/00– 06/28/01	23
Lower Tongue	East Experimental	WL/Cattle	Marked Twig	07/10/00 – 06/29/01	36
Lower Tongue	West Experimental	Wildlife	Marked Twig	07/18/00 – 06/28/01	28
Lower Tongue	West Experimental	Wildlife	Marked Twig	07/24/00 – 06/27/01	15

Powder River Ranger District

Upland and Riparian Utilization

Allotment	Pasture	Monitored By	Veg Type	Method	Utilization
Battle Park	Buck Cr Vs	FS	All	Ocular	OK
	Bellyache	FS	All	Ocular	OK
	Bellyache	FS	All	Ocular	Heavy
	Bald Ridge	Both	Carex	Stubble Ht	3.71”
	Bald Ridge	FS	Carex	Stubble Ht	3.5”
	Bald Ridge	FS	Carex	Stubble Ht	4.6”
	Bald Ridge	FS	Carex	Stubble Ht	3.3”
	Bald Ridge	FS	Carex	Stubble Ht	8.50”
	Buck Creek	FS	Carex	Stubble Ht	3.17”
	Middle Fork	FS	Carex	Stubble Ht	3.42”
	Middle Fork	FS	Carex	Stubble Ht	3”
	Middle Fork	FS	Carex	Stubble Ht	4.56”
	Bald Ridge	FS	All	Ocular	OK
	South Fork So	FS	Carex	Stubble Ht	3”
	Warner Ridge	FS	All	Ocular	Severe
Clear Creek	Hunter Creek	FS	Carex	Stubble Ht	4.92”
	Hunter Creek	Permittee	Carex	Stubble Ht	6.29”
	Hunter Creek	Permittee		Photo Point	
	N Lucasta	FS	Carex	Stubble Ht	5.43”
	N Lucasta	Permittee	Carex	Stubble Ht	6.21”
	N Lucasta	Permittee		Photo Point	
	S Lucasta	Permittee	Carex	Stubble Ht	5.47”
	S Lucasta	Permittee		Photo Point	
	Grouse Mtn.	Permittee	Carex	Stubble Ht	3.83”
	Grouse Mtn.	Permittee		Photo Point	
	Grouse Mtn.	FS	Carex	Stubble Ht	5.03”
	Hunter Mesa	FS	All	Ocular	OK
	Hunter Mesa	Permittee	Carex	Stubble Ht	6.98”
	Hunter Mesa	Permittee		Photo Point	
	Circle Park	Permittee	Carex	Stubble Ht	5.38”
	Circle Park	Permittee		Photo Point	
	Circle Park	FS	Carex	Stubble Ht	4.6”
	Holland	Permittee	Carex	Stubble Ht	5.11”
	Holland	Permittee	Carex	Stubble Ht	5.63”
	Holland	FS	Carex	Stubble Ht	4.7”

Allotment	Pasture	Monitored By	Veg Type	Method	Utilization
Clear Creek	Hondo Creek	Permittee	Carex	Stubble Ht	7.8”
	Hondo Creek	Permittee		Photo Point	
	S Hospital	Permittee	Carex	Stubble Ht	5.94”
	S Hospital	Permittee		Photo Point	
	S Hospital	FS	All	Ocular	OK
	N Hospital Hill	Permittee	Carex	Stubble Ht	6.63”
	N Hospital Hill	Permittee		Photo Point	
	N Hospital Hill	FS	Carex	Stubble Ht	4.63”
	Buffalo Park	Permittee	Carex	Stubble Ht	6.38”
	Buffalo Park	FS	Carex	Stubble Ht	5.45”
	Lower Buffalo	Permittee	Carex	Stubble Ht	2.97”
	Lower Buffalo	Permittee		Photo Point	
	Lower Buffalo	FS	All	Ocular	
	Hunter Corral	Permittee	Carex	Stubble Ht	5.82”
	Hunter Corral	Permittee		Photo Point	
	Hunter Corral	FS	All	Ocular	
	Buffalo Park	FS	Carex	Stubble Ht	4.11”
	School House	FS	All	Ocular	OK
	School House	FS	Carex	Stubble Ht	6.54”
	School House	FS	Carex	Stubble Ht	4.95”
	School House	Permittee	Carex	Stubble Ht	5.63”
	School House	FS	All	Ocular	OK
Crazy Woman		None			
Doyle Creek	East	Permittee	Carex	Stubble Ht	13.14”
	East	Permittee	Carex	Stubble Ht	7.08”
	East	Permittee	Carex	Stubble Ht	13.48”
	West	Permittee	Carex	Stubble Ht	7.30”
	West	Permittee	Carex	Stubble Ht	10.56”
	West	Permittee	Carex	Stubble Ht	15.30”
Tensleep	Antelope	FS	All	Ocular	Heavy
	Zaybrook	FS	All	Ocular	25%
	Warner	FS	All	Ocular	25%
	Antelope	FS	All	Ocular	At Standard
	Antelope	FS	All	Ocular	Very heavy
Elk Lake					
Garnet		None			
GromSour	Sourdough West	FS	Carex	Stubble Ht	5.38 FS
GromSour	West Camp	Permittee	Carex	Stubble Ht	5.38”
	West Camp	Permittee		Panorama	
	Upper	Permittee		StreamPhoto	

Allotment	Pasture	Monitored By	Veg Type	Method	Utilization
	Grommund				
	Lynx Park	Permittee	Carex	Stubble Ht	6.80”
	Lynx Park	Permittee		StreamPhoto	
	Lynx Park	Permittee		Panorama	
	Sourdough West	Permittee	Carex	Stubble Ht	5.01”
	Sourdough West	Permittee		Stream bank photos	
	Sourdough West	Permittee		Panorama	
	Sourdough East	Permittee	Carex	Stubble Ht	9.10”
	Sourdough East	Permittee		Panorama	
	Lower Grommund	Permittee	Carex	Stubble Ht	7.00”
	Lower Grommund	Permittee		Stream bank photos	
	Lower Grommund	Permittee		Panorama	
	Lower Grommund	Permittee		Panorama	
	Lower Grommund	Permittee		Stream bank photos	
	Lower Grommund	Permittee	Carex	Stubble Ht	9.89”
Hazelton		None			
Leigh Creek		Permittee	All	Photo	
		Permittee	All	Photo	
		Permittee	All	Photo	
		Permittee	All	Photo	
		Permittee	All	Photo	
		Permittee	All	Photo	
		Permittee	All	Photo	
		Permittee	All	Photo	
		Permittee	All	Photo	
Lake Piney		None			
McLain Lake		None			
Misty Moon		None			
Monument	trap	Permittee	All	Photo	

Allotment	Pasture	Monitored By	Veg Type	Method	Utilization
	trap	Permittee	All	Photo	
	trap	Permittee	All	Photo	
	trap	Permittee	All	Photo	
	trap	Permittee	All	Photo	
	trap	Permittee	All	Photo	
	trap	Permittee	All	Photo	
		Permittee	All	Photo	
	trap	Permittee	All	Photo	
	trap	Permittee	All	Photo	
Muddy Creek	Pole Creek	FS	Carex	Stubble Ht	6.9”
	Pole Creek	FS	Carex	Stubble Ht	5.4”
	Caribou Mesa	FS	Carex	Stubble Ht	5.5”
	Caribou Mesa	FS	Carex	Stubble Ht	3.15”
	Caribou Mesa	FS	All	ocular	Heavy
	Caribou Mesa	FS	Carex	Stubble Ht	3.35”
	Caribou Mesa	FS	All	ocular	60%
	Caribou Mesa	FS	All	ocular	55%
	Lower Elgin	FS	All	ocular	Light
	Caribou Creek	FS	Carex	Stubble Ht	4.97”
	Caribou Creek	FS	Carex	Stubble Ht	4.18”
	Caribou Creek	FS		Line intercept	
	Caribou Creek	FS		Line intercept	
	Resort	FS		Line intercept	
	Resort	FS		Line intercept	
	Lower Elgin	FS	All	Ocular	OK
	Upper Elgin	FS	All	Ocular	OK
	Crazy Woman	FS	All	Ocular	OK
	Caribou Creek	Permittee	Carex	Stubble Ht	6.73”
Muddy Creek	Crazy Woman	Permittee	Carex	Stubble Ht	6.04”
	Crazy Woman	Permittee	Carex	Stubble Ht	6.33”
	Pole Creek	Permittee	Carex	Stubble Ht	5.63”
	Pole Creek	Permittee	Carex	Stubble Ht	4.6”
	Upper Elgin	Permittee	Carex	Stubble Ht	4.19”

Allotment	Pasture	Monitored By	Veg Type	Method	Utilization
	Lower Elgin	Permittee	Carex	Stubble Ht	4.91”
	Caribou Mesa	Permittee			
North Canyon	High Park	FS	All	Ocular	Heavy
Piney	Ranger Station	Permittee	Carex	Stubble Ht	10.68”
	South Swamp	Permittee	Carex	Stubble Ht	13.80”
	Baird Swamp	Permittee	Carex	Stubble Ht	13.70”
Poison Creek	Billy Creek	FS	All	Ocular	OK
	Billy Creek	Permittee	Carex	Stubble Ht	9.52”
	Billy Creek	Permittee	Carex	Stubble Ht	12.00”
	Poison Creek	Permittee	Carex	Stubble Ht	10.56”
	Hazelton	Permittee	Carex/Poa	Stubble Ht	6.46”
Powder River	Powder River	FS		Line Intercept	
	Powder River	FS		Point Bar	
	Powder River	FS		Line Intercept	
	Powder River	FS		Line Intercept	
	Powder River	FS		Line Intercept	
	Powder River	FS		Line Intercept	
	Powder River	FS		Line Intercept	
	Powder River	FS		Line Intercept	
	Powder River	FS		Line Intercept	
	Powder River	FS		Line Intercept	
Rock Creek	North Rock	FS	All	Ocular	OK
	Johnson Creek	Permittee	Carex	Stubble Ht	5.10”
	Johnson Creek	Permittee	Carex	Stubble Ht	4.28”
	South French	Permittee	Carex	Stubble Ht	6.20”
	Rock Creek	Permittee	Carex	Stubble Ht	7.92”
	North French Ck	Permittee	Carex	Stubble Ht	7.86”
Rock Creek	South French Ck	Permittee	Carex	Stubble Ht	4.02”
Cont.	North French Ck	Permittee	Carex	Stubble Ht	9.68”
	Johnson Creek	Permittee	Carex	Stubble Ht	4.9”

Allotment	Pasture	Monitored By	Veg Type	Method	Utilization
	Rock Creek	Permittee	Carex	Stubble Ht	6.82”
Sourdough					
South Canyon	High Park	Permittee		Photo	
	High Park	Permittee		Photo	
	Little Prospect	Permittee		Photo	9.00”
	Little Prospect	Permittee		Photo	
	Pasture Park	Permittee		Photo	
	Pasture Park	Permittee		Photo	
	Prospect	Permittee		Photo	10.00”
	Prospect	Permittee		Photo	
	Leigh Creek Meadow	Permittee		Photo	15.00”
	Leigh Creek Meadow	Permittee		Photo	
	Powder River Divide	Permittee		Photo	7.00”
	Powder River Divide	Permittee		Photo	
	Roundup Grnds	Permittee		Photo	9.00”
	Roundup Grnds	Permittee		Photo	
	High Park	Permittee		Photo	
	Prospect Exclosure	Permittee		Photo	
	Prospect Exclosure	Permittee		Photo	
	Leigh Creek Exclosure	Permittee		Photo	
	Leigh Creek Exclosure	Permittee		Photo	
Tensleep Canyon	Willow Unit South	FS	All	Ocular	Heavy
	Willow North	FS	Carex	Stubble Ht	9.00”
	Willow North	FS	Carex	Stubble Ht	4.00”
	Willow North	FS	Carex	Stubble Ht	5.88”
Tensleep Canyon	Willow North	FS	Carex	Stubble Ht	3.91”
Upper Doyle		None			
Upper Meadows	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	

Allotment	Pasture	Monitored By	Veg Type	Method	Utilization
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	Baby Wagon	Permittee	All	Photo	
	Baby Wagon	Permittee	All	Photo	
	Baby Wagon	Permittee	All	Photo	
	Baby Wagon	Permittee	All	Photo	
	Baby Wagon	Permittee	All	Photo	
	Baby Wagon	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	South Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	North Meadow	Permittee	All	Photo	
	Burn	Permittee	All	Photo	
	Burn	Permittee	All	Photo	
Upper Meadows	Burn	Permittee	All	Photo	
	Burn	Permittee	All	Photo	
	Burn	Permittee	All	Photo	
Upper Meadows	Burn	Permittee	All	Photo	
	Burn	Permittee	All	Photo	

Allotment	Pasture	Monitored By	Veg Type	Method	Utilization
	Burn	Permittee	All	Photo	
	Burn	Permittee	All	Photo	
	Burn	Permittee	All	Photo	
	Burn	Permittee	All	Photo	
	Burn	Permittee	All	Photo	
Willow Park C&H		FS	All	Ocular	OK
	Willow Park	Permittee	Carex	Stubble Ht	7.34”
	Penrose Creek	Permittee	Carex	Stubble Ht	6.26”
	Elk Creek	Permittee	Carex	Stubble Ht	6.58”
Willow S & G	Sitting Bull Park	Permittee	All	Photo	
	Sitting Bull Park	Permittee	All	Photo	
	Middle Meadows	Permittee	All	Photo	
	Middle Meadows	Permittee	All	Photo	
	Long Park	Permittee	All	Photo	
	Long Park	Permittee	All	Photo	
	Long Park	Permittee	All	Photo	
	Long Park	Permittee	All	Photo	
	Long Park	Permittee	All	Photo	
	Long Park	Permittee	All	Photo	
